P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating (2025): 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 9; September 2025; Page No. 484-489

Received: 20-06-2025
Accepted: 26-07-2025

Indexed Journal
Peer Reviewed Journal

Extent of adoption of newly released groundnut varieties in Saurashtra region of Gujarat

[1]Tummala Naga Satya Sai Srivani, [2]NB Jadav, [3]VD Tarpara, [4]BH Tavethiya, [5]JV Chovatia and [6]MS Shitap

[1]Ph.D. Scholar, Junagadh Agricultural University, Junagadh, Gujarat, India

[2]Director of Extension Education, Junagadh Agricultural University, Junagadh, Gujarat, India

[3]Professor and Head of Agriculture Economics, Junagadh Agricultural University, Junagadh, Gujarat, India

[4, 5, 6]Assistant Professor, Junagadh Agricultural University, Junagadh, Gujarat, India

DOI: https://www.doi.org/10.33545/26180723.2025.v8.i9g.2447

Corresponding Author: Tummala Naga Satya Sai Srivani

Abstract

Groundnut (*Arachis hypogaea* L.) is an important oilseed crop in India, particularly in the Saurashtra region of Gujarat, where newly released high-yielding and disease-resistant varieties have been introduced to address productivity and sustainability challenges. The present study employed an ex-post facto design and multistage random sampling to select 180 farmers from Junagadh, Rajkot, and Jamnagar districts, with data collected in 2024–25 through a structured interview schedule. Results revealed that most farmers were young to middle-aged, moderately educated, and engaged in diversified occupations with medium levels of income, landholding, social participation, mass media exposure, extension contact, risk orientation, and economic motivation. A majority (68.33%) exhibited a medium level of adoption of newly released varieties, while 16.11 percent showed low adoption and 15.56 percent high adoption. Relational analysis indicated that age (-0.185*) and farming experience (-0.153*) were negatively and significantly associated with adoption, while total income (0.197**), landholding size (0.167*), social participation (0.172*), mass media exposure (0.253**), extension contact (0.178*), risk orientation (0.439**), and economic motivation (0.325**) showed positive and significant relationships. The study concludes that farmers in Saurashtra are moderately receptive to new groundnut varieties but face constraints such as cautious risk orientation, limited extension support, and resource barriers; thus, strengthening extension services, ensuring quality seed supply, enhancing ICT-based dissemination, and promoting farmer-to-farmer learning are essential to accelerate adoption and improve the productivity and sustainability of groundnut cultivation in the region.

Keywords: Groundnut, Saurashtra, adoption, newly released varieties

Introduction

Groundnut (*Arachis hypogaea* L.), a vital legume crop, serves as a significant source of protein, oil and income for millions of farmers and their families, particularly in regions such as Saurashtra region of Gujarat, India. The agricultural landscape in Saurashtra has been characterized by a dependence on traditional crop varieties, which often exhibit limitations in yield, resilience to climate variability, and pest resistance. In response to these challenges, agricultural research institutions have developed and released new groundnut varieties engineered for enhanced productivity, disease resistance, and adaptation to local climatic conditions.

Despite the potential benefits of these newly released groundnut varieties, there exists a knowledge gap regarding their socioeconomic impact on local farmers within Saurashtra. Many smallholder farmers, who constitute a substantial portion of the farming community in this region, are often hesitant to adopt new agricultural technologies due to factors including lack of awareness, financial constraints, risk aversion and insufficient access to resources and support. This raises critical questions about whether the introduction of these varieties leads to tangible improvements in the livelihoods of farmers and whether they contribute positively to the broader socioeconomic structure of the Saurashtra region.

The significance of this study is emphasized by the pressing challenges faced by the agricultural sector in Saurashtra, including water scarcity, soil degradation and fluctuating market demands. As agriculture is a major economic driver in this region, understanding the impact of innovations such as new groundnut varieties is essential for informing policymakers, extension services, and agricultural development programs. Insights from this study could pave the way for strategies that enhance the adoption of beneficial agricultural technologies, thereby improving productivity and sustainability in the region.

Keeping in view the above-mentioned facts, it was thought worthwhile to carry out an investigation entitled, “Extent of Adoption of Newly Released Groundnut Varieties in Saurashtra Region of Gujarat.”

Materials and Methods

In the present investigation, an *Ex-post facto* research design

and a multistage sampling technique was used. Out of the 11 districts in the Saurashtra region in Gujarat, three districts *viz*. Junagadh, Rajkot and Jamnagar were randomly selected for the study. From each district, two talukas were randomly selected. From each taluka, two villages were randomly selected, and from each village, 15 farmers were randomly contacted. Thus, constituting a total of 6 talukas, 12 villages and 180 respondents. The data was collected in the year 2024-25, using a well-structured interview schedule. Mean, frequency, percentage and correlation coefficient were used to measure the extent of adoption of newly released groundnut varieties.

Results and Discussion

The results of the present study from Table 1 reveal the socio-economic profile and psychological characteristics of the respondents. They were analyzed and the findings are presented under various heads.

Age

The results revealed that an equal proportion of farmers (43.33%) belonged to the young age group (<35 years) and the middle age group (35–50 years), while only 13.34 percent were in the old age group (>50 years). This indicates that the majority of groundnut farmers are in their active and productive age, which is favorable for the adoption of modern agricultural practices and innovations. The discussion is in with Srivani *et al*. (2022) [13].

Education

Educational status showed a relatively higher literacy rate among respondents, with 37.22 percent having completed college/post-graduation and 25.56 percent educated up to high school/diploma level. A smaller proportion had studied only up to primary school (24.44%) and middle school (10.00%). Only 2.22 percent were functionally literate and 0.56 percent were illiterate. These results suggest that a majority of groundnut farmers are well educated, which contributes positively to their decision-making ability, adoption of improved practices, and participation in extension activities. The findings align with earlier research of Datta *et al*. (2020) [3] and Vinod (2021) [15].

Occupation

Farming was the primary occupation, with 27.78 percent solely engaged in agriculture. An equal proportion (27.78%) combined farming with animal husbandry, reflecting the integrated farming systems prevalent in the region. About 17.78 percent combined farming with business, while 13.33 percent practiced farming alongside animal husbandry and service. Smaller proportions were engaged in farming + service (4.44%) and farming + others (8.89%). The diversity of occupational engagement suggests risk minimization strategies and the importance of supplementary income sources to stabilize livelihoods. The discussion is in line with the study of Maheriya (2013) [9] and Mubushar *et al.* (2019) [10].

Income

The income distribution shows that the majority (70.00%) fell under the medium income group (₹1,53,202.8–₹14,35,658.4), while 18.33 percent belonged to the high-income category and 11.67 percent to the low-income category. This indicates a relatively stable economic background of the respondents, which might support investments in improved agricultural technologies. The findings are consistent with previous research by Gorfad (2012) [7] and Bhavani *et al*. (2023) [1].

Size of Landholding

Most farmers had medium-sized landholdings (41.11%) and small-sized holdings (38.89%), while 11.67 percent had large holdings and only 8.33 percent were marginal farmers. This shows that the farming community is dominated by small and medium farmers, consistent with the national agricultural scenario. This finding aligns with Datta *et al*. (2020) [3] and Vinod (2021) [15].

Experience in Groundnut Cultivation

Experience analysis revealed that 71.67 percent had medium experience (3–23 years), followed by 20.55 percent with high experience (>23 years) and only 7.78 percent with low experience (<3 years). This suggests that most respondents possess substantial knowledge and skills in groundnut farming, which can facilitate better adoption of improved practices and reduce production risks. The findings were in line with Bhavani *et al*. (2023) [1].

Possession of Assets

Asset ownership, an indicator of economic stability, showed that 65.56 percent belonged to the low asset possession group, while 23.33 percent had medium asset levels and only 11.11 percent were in the high category. This indicates that despite moderate incomes, most farmers have limited asset accumulation, possibly due to high agricultural expenditure, debts, or lack of diversification into durable assets. The findings were in line with the study of Gopi *et al*. (2017) [6].

Social Participation

Social participation was found to be medium in 76.67 percent of respondents, while 13.33 percent had high participation and 10.00 percent had low. This highlights that a majority are moderately active in local organizations and community groups, which play a crucial role in disseminating agricultural innovations and collective decision-making. These results are in line with the findings of Hagos (2017) [8] and Vinod (2021) [15].

Mass Media Exposure

A large proportion of farmers (79.45%) had medium mass media exposure, while 13.33 percent had low exposure and 7.22 percent had high exposure. This indicates that most farmers are moderately connected with information channels such as television, radio, newspapers, and mobile-based applications. However, the lower percentage of high exposure suggests a need for enhancing information dissemination through ICT tools and mass media campaigns. The data is in line with the findings of Christian and Chauhan (2019) [2] and Samant and Sawant (2019) [11].

Extension Contact

Extension contact was found to be moderate for 78.33 percent of farmers, while 11.11 percent had high contact and

10.56 percent had low contact. The moderate level suggests that farmers interact occasionally with extension personnel, but continuous and intensive extension support is lacking. The result is in line with the findings of Bhavani *et al.* (2023) [1].

Table 1: Profile of the groundnut farmers (n=180)

Category	Frequency	Percentage
Age		
Young age (<35 years)	78	43.33
Middle age (between 35-50 years)	78	43.33
Old age (> 50 years)	24	13.34
Education		
Illiterate	1	0.56
Functionally literate	4	2.22
Primary school	44	24.44
Middle school	18	10.00
High school/Diploma	46	25.56
College/Post graduation	67	37.22
Occupation		
Farming	50	27.78
Farming + Animal Husbandry	50	27.78
Farming + Animal husbandry + Service	24	13.33
Farming + Business	32	17.78
Farming + service	8	4.44
Farming + others	16	8.89
Income		
Low income (<₹ 1,53,202.8)	21	11.67
Medium income (₹ 1,53,202.8- ₹ 14,35,658.4)	126	70.00
High income (>₹ 14,35,658.4)	33	18.33
Size of land holding		
Marginal size of landholding (Up to 1.00 ha)	15	8.33
Small size of landholding (1.01-2.00 ha)	70	38.89
Medium size of landholding (2.01-4.00 ha)	74	41.11
Large size of landholding (Above 4.00 ha)	21	11.67
Experience as a groundnut grower		
Low experience (Below 3 years)	14	7.78
Medium experience (3-23 years)	129	71.67
High experience (Above 23 years)	37	20.55
Possession of assets		
Low (Up to ₹ 2,73,728.6)	118	65.56
Medium (₹ 2,73,728.7 - ₹ 9,77,184.1)	42	23.33
High (Above ₹ 9,77,184.1)	20	11.11
Social participation		
Low level of participation (Below 2.4)	18	10.00
Medium level of participation (2.4-10)	138	76.67
High level of participation (Above 10)	24	13.33
Mass media exposure		
Low mass media exposure (Up to 3.6)	24	13.33
Medium mass media exposure (3.7-8.7)	143	79.45
High mass media exposure (Above 8.7)	13	7.22
Extension contact		
Low (Below 5.2)	19	10.56
Moderate (5.2-13.8)	141	78.33
High (Above 13.8)	20	11.11
Risk orientation		
Low (Up to 20.13)	14	7.78
Medium (20.14-27.62)	152	84.44
High (Above 27.62)	14	7.78
Economic motivation		
Low (Below 20.85)	22	12.22
Medium (20.85-28.45)	139	77.22
High (Above 28.45)	19	10.56

Risk Orientation

The findings show that a vast majority (84.44%) had medium risk orientation, while only 7.78 percent each had high and low risk orientation. This indicates that farmers are moderately willing to take risks in adopting new technologies but prefer a cautious approach. High risk

orientation is generally associated with entrepreneurial attitudes, whereas medium levels suggest balanced decision-making. These findings align with the results of Bhavani *et al*. (2023) [1].

Economic Motivation

Most respondents (77.22%) showed medium economic motivation, followed by 12.22 percent with low and 10.56 percent with high motivation. This reflects a moderate drive among farmers to improve productivity and income through farming. The findings align with the research of Dhodia *et al.* (2017) and Dnyaneshwar (2018) [5].

The overall profile of the groundnut farmers analysis indicates that groundnut farmers in the study area are predominantly young to middle-aged, moderately educated, and engaged in diversified occupations with a medium level of income and landholdings. Their farming experience is substantial, yet asset possession remains low, reflecting challenges in capital accumulation. Socio-psychological attributes such as medium social participation, mass media exposure, extension contact, risk orientation, and economic motivation suggest that farmers are receptive to innovations but require adequate support systems for effective adoption.

The dominance of medium categories across most variables indicates a balanced socio-economic environment where farmers have the potential to adopt improved agricultural technologies but are constrained by limited assets, moderate extension access, and cautious risk behavior. Strengthening extension services, enhancing ICT-based mass media exposure, and encouraging collective participation through farmer organizations could significantly improve the adoption of groundnut innovations.

The results in Table 2 revealed that a majority of the respondents (68.33%) were found in the medium level of adoption category of newly released groundnut varieties, while 16.11 percent had low adoption and 15.56 percent had high adoption. This distribution indicates that farmers are moderately receptive to adopting new groundnut varieties but have not fully transitioned toward complete adoption.

Table 2: Distribution of respondents according to their overall extent of adoption of newly released groundnut varieties (n=180)

Sr. No.	Category	Frequency	Percentage
1	Low level of adoption (Below 23.3)	29	16.11
2	Medium level of adoption (23.3-42.7)	123	68.33
3	High level of adoption (Above 42.7)	28	15.56
	Total	180	100.00

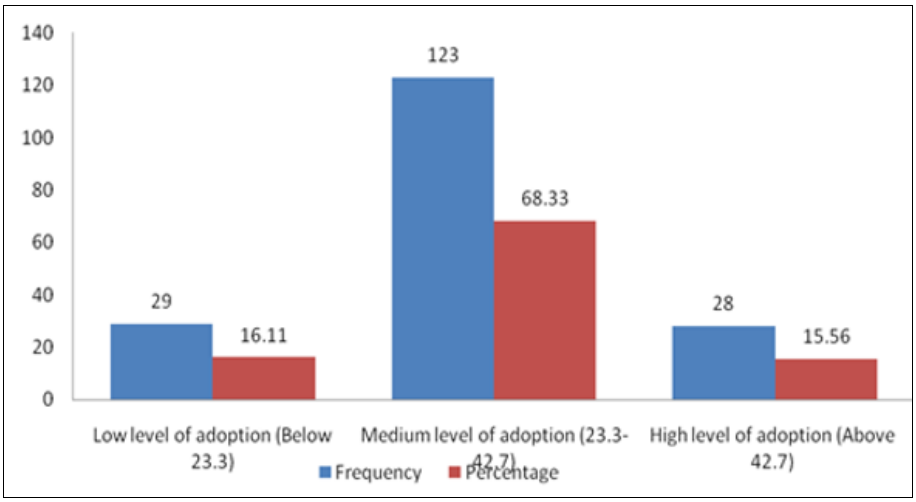

Fig 1: Distribution of respondents according to their extent of adoption

The dominance of medium adoption could be attributed to several socio-economic factors such as medium landholdings, income, and asset possession, as well as moderate levels of education, farming experience, extension contact, and mass media exposure observed in the study area. These characteristics suggest that farmers possess the necessary knowledge and resources to adopt innovations partially but often remain cautious about fully embracing them due to concerns about risk, cost, and long-term performance. The discussion is in line with Swati *et al*. (2022) [14] and Shanmuka *et al*. (2024) [12].

The relational analysis in Table 3 between the characteristics of respondents and their extent of adoption of newly released groundnut varieties revealed both positive and negative associations. Age (-0.185*) and experience in groundnut cultivation (-0.153*) were found to be negatively and significantly correlated with adoption, indicating that younger and relatively less experienced farmers were more receptive to new varieties, while older and experienced farmers preferred traditional practices. Education, occupation, and possession of assets showed no significant relationship, suggesting that formal education or asset ownership alone does not directly influence adoption behavior. In contrast, variables such as total income (0.197**), size of landholding (0.167*), social participation (0.172*), mass media exposure (0.253**), extension contact (0.178*), risk orientation (0.439**), and economic motivation (0.325**) were positively and significantly associated with adoption. These findings suggest that farmers with greater resources, stronger social linkages, and

better access to information are more likely to adopt improved varieties.

Table 3: Relational analysis between characteristics of respondents the extent of adoption of newly released groundnut varieties

Sr. No.	Independent variable	Correlation coefficient 'r'
1	Age	-0.185*
2	Education	-0.014^{NS}
3	Occupation	-0.033^{NS}
4	Total income	0.197**
5	Size of land holding	0.167*
6	Experience of groundnut grower	-0.153*
7	Possession of assets	-0.020^{NS}
8	Social participation	0.172*
9	Mass media exposure	0.253**
10	Extension contact	0.178*
11	Risk orientation	0.439**
12	Economic motivation	0.325**

NS-Non-significant *-Significant at 0.05 percent level ** - Significant at 0.01 percent level

The strong positive correlations of risk orientation and economic motivation emphasize that farmers who are more willing to take risks and driven by economic gains are significantly more inclined toward adoption. Similarly, higher mass media exposure and frequent extension contact enhance awareness and confidence in new technologies, thereby facilitating adoption. The role of income, landholding, and social participation further highlights the importance of economic strength and community involvement in shaping adoption behavior. Overall, the findings suggest that improving extension services, enhancing access to timely information, and creating enabling environments for risk-taking can accelerate the adoption of newly released groundnut varieties. At the same time, strategies targeting older and experienced farmers with tailored demonstrations and assurance mechanisms may help overcome their reluctance to embrace innovations. This finding was in accordance with the study of Swati *et al*. (2022) [14].

Conclusion

The study clearly demonstrates that groundnut farmers in the Saurashtra region exhibit a predominantly medium level of adoption of newly released groundnut varieties, influenced by their socio-economic and psychological characteristics. Younger farmers, higher income levels, larger landholdings, greater social participation, stronger extension contact, and higher risk orientation significantly enhanced adoption, while older and more experienced farmers tended to remain conservative with traditional practices. The dominance of medium adoption reflects both receptivity and cautiousness, highlighting the need for stronger extension efforts, ICT-based dissemination, and farmer-to-farmer learning platforms to build confidence in new varieties. Strengthening institutional support through timely availability of quality seeds, credit facilities, and training programs would further encourage adoption. Overall, the findings suggest that accelerating the adoption of improved groundnut varieties in Saurashtra requires a balanced approach that combines economic incentives, capacity building, and effective information delivery systems to enhance productivity, income, and sustainability in the region.

References

1. Bhavani V, Savitha B, Madhu Babu K, Srilatha Ch. Profile characteristics of stakeholders of groundnut value chain in Telangana state. Int J Stat Appl Math. 2023;8(5):884-8.
2. Christian BM, Chauhan NB. Participation of farm woman in decision making process with respect to animal husbandry practices. Gujarat J Ext Educ. 2019;3(2):137-44.
3. Datta T, Jiban KS, Mohammad AR, Muslima A, Rashid A. Socio-economic status of pineapple growers in Moulvibazar district of Bangladesh. Asian J Agric Ext Econ Sociol. 2020;38(8):152-61.
4. Dilamo AH. Factors affecting adoption of improved agronomic practices and its effect on income and nutrition: The case of groundnut producing farmers in Babile district, Eastern Ethiopia [MSc thesis]. Haramaya: Haramaya University; 2017.
5. Dnyaneshwar YH. Entrepreneurial behavior of garlic growers [MSc thesis]. Akola: Dr. Panjabrao Deshmukh Krishi Vidyapeeth; 2018.
6. Gopi R, Narmatha N, Sakthivel KM, Uma V, Jothilakshmi M. Socio-economic characteristics and its relationship with information seeking pattern of dairy farmers in Tamil Nadu, India. Asian J Dairy Food Res. 2017;36(1):16-20.
7. Gorfad PS. Farmers perception and adoption of groundnut production technology [PhD thesis]. Junagadh: Junagadh Agricultural University; 2012.
8. Hagos T. The role of women participation on agricultural extension service: The case of Adiykoro kebelle, Ahferom woreda central zone of Tigray region. In: Proc 11th Annu Student Res Forum, St. Mary's University; 2017. p. 283-95. Available from: http://hdl.handle.net/123456789/4066 [Accessed 2024 Jan 20].
9. Maheriya HN. Technology utilization behavior of paddy growers in Anand district of Gujarat state [MSc thesis]. Anand: Anand Agricultural University; 2013.
10. Mubushar M, Fahad OA, Mirza BB, Bader MA, Khan AQ. Assessment of farmers on their knowledge regarding pesticide usage and biosafety. Saudi J Biol Sci. 2019;26(7):1903-10.
11. Samant S, Sawant V. Constraint analysis of rice farmers in Sindhudurg district of Maharashtra. Asian J Ext Educ. 2019;37(33):259-66.
12. Shanmuka A, Jadav NB, Srivani TNSS, Krimpal K. Study on varietal replacement rate of groundnut in Saurashtra region of India. Indian J Ext Educ. 2024;60(4):19-23.
13. Srivani TNSS, Parvez R, Rajesh S, Hema VLL. Knowledge of tribal farmers about VDVK activities in Andhra Pradesh. Asian J Agric Ext Econ Sociol. 2022;40(11):101-8.
14. Swati NJ, Minaxi KB, Kiran UC. Characteristics of groundnut cultivators and their adoption level on crop production technology. Indian Res J Ext Educ. 2022;22(5):214-9.

15. Vinod KT. A critical study on stakeholder analysis of market led extension in Telangana [PhD thesis]. Hyderabad: Prof. Jayashankar Telangana State Agricultural University; 2021.