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Brand Preferences, Purchase Behaviour and Satisfaction of Farmers towards Insecticides for Summer Groundnut in Jamnagar District of Gujarat

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ABSTRACT: This empirical research study examines the brand preferences, purchase behaviour, and satisfaction levels of summer groundnut farmers towards insecticides in Jamnagar district, Gujarat. A structured survey was conducted covering 200 farmers across four Talukas to analyse their socio-economic characteristics, preferred insecticide brands, buying behaviour, and satisfaction levels. The findings revealed that the respondents were predominantly male, aged between 31 and 50 years, possessing secondary or higher secondary education, and mainly small to medium landholders with extensive farming experience. Groundnut farmers were highly aware of insect pests affecting their crops and relied significantly on insecticides to manage yield losses. Among the various brands, UPL insecticides were the most preferred due to their superior quality, effectiveness, and dealer recommendations, followed by brands like Bayer, Dhanuka, and Sumitomo. Purchase decisions were primarily influenced by factors such as product quality, performance, competitive pricing, and timely availability, while dealers remained the most trusted source of information. Most farmers purchased insecticides from local agro-input dealers using credit payments. The satisfaction assessment indicated high levels of satisfaction with UPL insecticides in terms of quality, availability, packaging, and effectiveness, while price was perceived as moderately satisfactory. Based on these insights, it is suggested that companies should focus on enhancing dealer networks, conducting frequent field demonstrations, and offering farmer-oriented training programmes to strengthen product knowledge and brand loyalty. Additionally, simplified marketing communication in regional languages can further enhance reach and adoption among groundnut farmers in Jamnagar district.

Keywords: Brand Preference, Insecticides, Jamnagar District, Purchase Behaviour, Satisfaction, Summer Groundnut.

INTRODUCTION

The agricultural input industry consists of essential products used in farming, including high-yielding seeds, fertilizers, and crop protection chemicals such as insecticides, herbicides, fungicides, and fumigants. These inputs play a vital role in enhancing crop productivity, improving quality, and reducing losses caused by pests, diseases, and nutrient deficiencies. According to the Food and Agriculture Organization (FAO, 2023), agricultural inputs are crucial for achieving sustainable food production and meeting the growing global demand for food and fiber.

India is one of the world's leading agricultural economies, with over 55% of its population engaged in agriculture and allied activities (ICAR, 2022). In 2024, the agricultural sector contributed approximately USD 1.20 trillion (INR 99.7 lakh crore) to the national economy and is expected to grow at a compound annual growth rate (CAGR) of 10.08% through 2033 (IMARC Group, 2024). This growth has driven significant demand for reliable and efficient agricultural inputs, particularly agrochemicals and fertilizers.

The Indian agrochemical market was valued at USD 33.17 billion in 2024 and is projected to grow steadily due to increasing pest pressures and the need for higher productivity (Grand View Research, 2024). Fertilizers continue to dominate the market, while crop protection products, especially insecticides, are gaining importance. India is the second-largest exporter of agrochemicals globally, with major companies like UPL, Rallis India, and Bayer Crop Science playing key roles (Expert Market Research, 2024).

In addition to chemical inputs, the Indian seed industry has expanded significantly, introducing hybrid and genetically improved varieties that support higher

yields and pest resistance. Government initiatives such as "Make in India," e-NAM, and a ₹1.22 lakh crore allocation for agriculture in FY2025 are expected to further strengthen the input sector.

REVIEW OF LITERATURE

Rajani (2012) examined the purchasing behaviour of cotton farmers in Rajkot district using a sample of 140 respondents. The study primarily focused on understanding the decision-making process of farmers regarding seed purchases. It revealed that 69% of farmers purchased seeds from retailers, while 27% were influenced by media sources. Product quality (51%) and timely availability (64%) emerged as the most significant influencing factors. High prices (33%) and lack of availability (22%) were the main reasons for not purchasing certain products.

Chavda (2015) conducted a study on the buying behaviour, brand awareness, and farmer satisfaction towards Indofil fungicide in Junagadh district. The results showed that farmers were largely satisfied with the product's price and quality. Product quality was identified as the most influential factor in determining satisfaction. Effective field demonstrations and superior product performance led to high dealer recommendations and brand preference for Indofil.

Lokesh *et al.* (2015) investigated the factors influencing the selection of pesticide brands among farmers and dealers in the Kodad region of Telangana. Based on responses from 100 farmers, the study revealed that effective pest control was the top priority, followed by price and brand image. Other important factors included advice from progressive farmers, dealer recommendations, availability, promotional activities, and credit facilities.

Kulkarni *et al.* (2018) studied the purchasing behaviour of cotton farmers in Nanded district, Maharashtra. The study highlighted the significance of timely availability of seeds, technical advice, and guidance in variety selection. These findings emphasize the importance of service-oriented factors in purchase decisions.

Parmar (2019) explored farmers' satisfaction levels towards the Vesta herbicide using Likert scale analysis among 130 respondents. The study found high satisfaction with product quality and moderate satisfaction with factors such as price, brand image, and availability. Product quality was emphasized as the most critical factor shaping overall farmer satisfaction.

Rai and Kulshreshtha (2023) carried out research in Uttar Pradesh using multistage sampling to understand brand preference determinants in agrochemical purchases. The study ranked retailer recommendations, competitive pricing, and product quality as the top three influencing factors. Previous experience, brand popularity, and timely availability were found to have moderate influence on brand selection.

Zalavadiya and Mishra (2023) studied the awareness and brand preference of chickpea farmers towards pesticides in Junagadh district. The study employed Rotated Component Matrix analysis and identified four major influencing dimensions: perception about product, influence by others, price sensitivity, and ease of use. Variables such as brand image, dealer and peer recommendations, pricing, and accessibility significantly contributed to farmers' brand preference.

Senthilnathan *et al.* (2023) investigated agrochemical brand preference in Tamil Nadu based on field demonstrations conducted across seven districts. The findings showed a strong preference for specific insecticides and fungicides such as Rimon, Curzate, and Rodomil Gold, depending on the pest or disease targeted. Product effectiveness, quality, and cost were the primary reasons behind brand selection.

Manda *et al.* (2023) studied pesticide brand preference among farmers in Guntur district, Andhra Pradesh. The results indicated that dealer influence (mean score 2.76), price (2.69), and previous experience (2.55) were the major drivers of brand choice. The study also identified major problems such as high prices, unavailability, lack of credit, and limited technical guidance.

Sahoo *et al.* (2023) analyzed the purchasing behaviour and challenges faced by farmers and dealers in Keshod taluka, Junagadh district. The study highlighted that small and marginal farmer faced high insecticide costs and poor after-sales service. These factors adversely affected their satisfaction and purchasing patterns.

Srinivasa *et al.* (2023) examined the socio-economic status of groundnut farmers in Karnataka's Central Dry Zone. Rising labor costs and limited mechanization were identified as major challenges in groundnut cultivation. The study also employed Likert scales and chi-square tests to understand factors like seasonal wages and adoption of modern tools, which indirectly influence purchasing decisions related to agrochemicals.

Vasoya *et al.* (2023) conducted research on cumin farmers in Dhrol taluka of Jamnagar district to understand their insecticide purchasing behaviour and associated challenges. Most farmers were middle-aged with low educational levels and limited land holdings. Farming was the primary occupation, and many respondents relied on animal husbandry as a supplementary source of income. The study emphasized localized insights into pesticide use and farmer profiles.

Pravin *et al.* (2023) studied consumer behaviour and satisfaction towards herbicides among 130 farmers in Gujarat. Using Likert scale and multiple regression analysis, the study found that the majority of farmers expressed highly positive opinions on factors such as product quality (77.69%), price (79.23%), and packaging (90.00%). Overall, 86.92% of farmers had a highly favorable view of herbicides used in the region.

Bhalodiya and Thakkar (2024) reported that farmers' brand preferences were mainly influenced by dealers' recommendation. Higher prices and fear of adulteration were found to be the main constraints perceived by farmers in the purchase of cotton pesticides.

Dabhi and Thakkar (2024) found that most of the farmers got aware about fungicides from agro service centre and the most influencing factors for purchase of fungicides were found to be dealer recommendation followed by past experience and price. Constraints faced by most of the farmers were high cost of fungicides followed by lack of technical knowledge.

Zapda and Thakkar (2024) in their landmark study on awareness and purchasing behaviour of farmers towards insecticides for sesamum crop in Saurashtra region of Gujarat reported that farmers' brand preferences for specific insecticides were influenced by competitive pricing, past experiences, and the opinions of progressive farmers. Price sensitivity was significant, leading farmers to switch brands when prices were high, products were unavailable, or credit facilities were lacking. It was also found that farmers' choices were also strongly influenced by farmer meetings and field demonstrations.

Collectively, these studies underline the importance of product quality, price, timely availability, dealer influence, and product performance in shaping brand preference and purchasing decisions. Understanding these factors is crucial for agri-input companies and policymakers aiming to enhance farmer satisfaction and promote effective use of agrochemicals.

Research Gap: In nutshell, there have been plethora of research studies highlighting the factors considered important while making purchase decision for insecticides for different crops, associated buying behaviour of farmers, their usage pattern and the constraints. But, there is a dearth of empirical research on assessment of brand preferences, purchase behaviour and satisfaction of farmers towards insecticides for summer groundnut, particularly in Saurashtra region of Gujarat state; and this study is a sincere attempt to fill that void. In and all, this study stands out as a landmark study for developing thorough understanding about the brand preferences, purchase behaviour and satisfaction of summer groundnut growing farmers towards insecticides.

METHODOLOGY

The research was conducted in Jamnagar district of Gujarat due to its significant role in summer groundnut production. The study employed a descriptive research design to understand various attributes influencing farmers' insecticide purchase behavior and brand preferences. It included both primary and secondary methods of data collection to ensure depth and accuracy. Primary data were collected through structured interviews with 200 summer groundnut farmers across four selected talukas. Secondary data were obtained from company records, published reports, academic journals, and official government sources related to agriculture and agrochemicals.

A multi-stage sampling technique was adopted for the study. In the first stage, Jamnagar district was selected purposively. In the second stage, four talukas Jamnagar, Dhrol, Jamjodhpur, and Lalpur were chosen randomly. From each taluka, five villages were selected randomly. In each village, ten farmers were selected purposively, leading to a total sample size of 200 respondents.

Data collection was carried out between March and May 2025. The personal interview method was used to gather accurate and firsthand information from the selected respondents. The interview schedule was designed to capture details regarding socio-economic characteristics, brand preferences, purchase behaviour, satisfaction levels. For analysis, the data were processed using tabular techniques and statistical tools such as percentages, and weighted average means. In addition, chi-square tests were applied to examine the relationships between variables such as landholding size and preferred pack size of insecticides, as well as preferred pack size and area under groundnut cultivation.

Overall, the study aimed to describe the current state of insecticide purchase behavior and brand preferences among summer groundnut farmers, using a combination of qualitative and quantitative tools to ensure comprehensive and meaningful analysis.

RESULTS AND DISCUSSION

Socio-Economic characteristics of Summer Groundnut Farmers. The demographic and socio-economic characteristics of the 200 surveyed farmers revealed notable patterns relevant to agricultural practices in the study area. A majority (37%) of respondents were in the 41–50 years age group, followed by 27% aged 31–40 years, indicating that farming is predominantly undertaken by middle-aged individuals. All respondents were male, highlighting a complete absence of female participation and suggesting persistent gender disparities in agricultural involvement and decision-making. Most farmers (69%) belonged to nuclear families, potentially limiting access to family labor when compared to joint family structures (31%). In terms of farming experience, 51.5% of respondents had 11–20 years of experience, reflecting a moderately experienced agricultural community. The landholding structure was dominated by small (1.01–2 ha) and semi-medium (2.01–4 ha) farmers, comprising 39% and 34% of the sample respectively, indicating the prevalence of small-scale farming. Educational attainment was generally low, with 39.5% of farmers below SSC level, 32% having completed HSC, and 21% being illiterate. Income levels showed that 42% of respondents earned ₹4,00,001–₹6,00,000 annually, 33.5% earned ₹2,00,001–₹4,00,000, and 20% earned above ₹6,00,000, placing the majority in the mid-income bracket. All farmers practiced irrigated farming, yet none had adopted modern methods such as drip or sprinkler irrigation, relying solely on surface irrigation. Occupational data revealed that 54.5% of farmers were fully engaged in agriculture, while the remainder diversified into animal husbandry (23.5%), service (11.5%), or business (10.5%). Regarding crop-specific practices, 61% of farmers allocated 4.01–8 acres to summer groundnut cultivation, followed by 18.5% with 8.01–12 acres, indicating a moderate land commitment to this crop.

Table 1: Socio-economic characteristics of summer groundnut farmers.

Variable	Parameter	Frequency	Percentage
Age group	18–30 years	23	11.50
	31-40 years	54	27.00
	41-50 years	74	37.00
	Above 50 years	49	24.5
Gender of Farmers	Male	200	100
	Female	00	00.00
Type of family	Nuclear	138	69.00
	Joint	62	31.00
Farming Experience	Below 5 Years	17	8.5
	5 – 10 Years	64	32.00
	11 – 20 Years	103	51.50
	Above 21 Years	16	8.00
Land holding	Marginal (up to 1 ha)	24	12.00
	Small (1.01- 2ha)	78	39.00
	Medium (2.01- 4ha)	68	34.00
	Large (more than 4 ha)	30	15.00
Education level of farmers	Illiterate	42	21.00
	Below SSC	79	39.50
	HSC	64	32.00
	Graduate	12	6.00
	Post graduate	3	1.50
Annual Income of farmers	Below 1,00,000	00	00.00
	1,00,001 – 2,00,000	9	4.50
	2,00,001 – 4,00,000	67	33.50
	4,00,001 – 6,00,000	84	42.00
	Above 6,00,000	40	20.00
Type of Farming	Irrigated	200	100
	Rainfed	00	00
Method of Irrigation	Surface	200	100
	Drip	00	00.00
	Sprinkler	00	00.00
Occupation of Groundnut farmers	Only Agriculture	109	54.50
	Agriculture + AH	47	23.5
	Agriculture + Service	23	11.50
	Agriculture + Business	21	10.50
Area under Summer Groundnut cultivation	Less than 4 acres	18	9.00
	4.01- 8 acres	122	61.00
	8.01 – 12 acres	37	18.50
	More than 12 acres	23	11.50

Brand Preferences of Insecticides among Summer Groundnut Farmers. The study found that 92.5% of farmers were aware of various insecticide brands, with UPL–Ulala being the most recognized product (68%), followed by Swal–Panama (54.5%), FMG–Beleaf (49.5%), and Dharmaj (48.5%). In terms of usage, 46% of farmers reported using UPL–Ulala, making it the most preferred brand, while other brands like Dhanuka, BASF, and Adama were used by 20.5% collectively. Key factors influencing brand preference included competitive price (mean score: 3.81), product quality (3.76), prior experience (3.73), and the opinion of progressive farmers (3.68). Brand switching was mainly driven by lower price (42%), lack of credit facility (19.5%), and product unavailability. These findings suggest that farmers' choices are primarily shaped by economic factors, personal experience, and peer influence.

Table 2: Factor influencing Brand Preference towards insecticides.

Factors	SA (5)	A (4)	N (3)	D (2)	SD (1)	CS	MEAN	RANK
Quality	78 (390)	53 (212)	29 (87)	23 (46)	17 (17)	752	3.76	II
Brand loyalty	55 (275)	46 (184)	38 (114)	31 (62)	30 (30)	665	3.32	VII
Competitive Price	82 (410)	51 (204)	31 (93)	19 (38)	17 (17)	762	3.81	I
Timely availability	65 (325)	48 (192)	37 (111)	22 (44)	28 (28)	700	3.50	VI
Previous experience	72 (360)	62 (248)	28 (84)	17 (34)	21 (21)	747	3.73	III
Field officer/ Retailer influence	69 (345)	57 (228)	25 (75)	23 (46)	26 (26)	720	3.60	V
Progressive farmer opinion	74 (370)	56 (224)	26 (78)	21 (42)	23 (23)	737	3.68	IV
Sales promotional activity	38 (190)	49 (196)	35 (105)	42 (84)	36 (36)	611	3.05	VIII
Advertisement	30 (150)	51 (204)	33 (99)	47 (94)	39 (39)	586	2.93	IX

Note: Strongly Agree (SA): 5 Agree (A): 4 Neutral (N): 3 Disagree (DA): 2 Strongly Disagree (SD): 1
Cumulative Score (CS) = Maximum Scale × No. of Farmers
Mean = Cumulative Score (CS) / Total No. of Farmers (200)

Purchase Behaviour of Summer Groundnut Farmers Towards Insecticides. All surveyed farmers (100%) purchased insecticides exclusively from local agri-input dealers, indicating complete dependence on traditional retail channels with no adoption of online or cooperative sources. Awareness was primarily generated through agri retailers (85%) and progressive farmers (64.5%), followed by advertisements (55%), farmers' meetings (47%), and field demonstrations (35%). Most farmers (52.5%) preferred credit-based purchases, while 25.5% used both cash and credit, and only 5% adopted digital payment methods. A majority had long-term experience with insecticides, with 34.5% using them for over 8 years. Purchasing frequency was highest at three (29.5%) and four times (24.5%) per year. Purchase decisions were influenced mainly by previous experience (mean score 3.89), followed by progressive farmers' opinions and quality. Smaller pack sizes (60 gm and 150 gm) were most preferred, especially by farmers with smaller landholdings, indicating a direct relationship between land size and pack size preference.

Table 3: Association between pack size of Insecticides and land holding.

Land Holding/Pack size	60 Gm	150 Gm	250 Gm	500 Gm	Grand Total
Marginal (<1 ha)	28	2	0	0	30
Small (1.01-2 ha)	23	8	1	0	32
Medium (2.01-4 ha)	2	16	8	0	26
Large (>4 ha)	0	0	2	2	4
Grand Total	53	26	11	2	92
Chi Square Test					
Chi square statistics value		**df**		**Chi square table value (0.05)**	
130.515		**9**		**16.92**	

Table 4: Association between pack size of Insecticides and area under summer groundnut cultivation.

Area under summer groundnut cultivation/Pack size	**60 Gm**	**150 Gm**	**250 Gm**	**500 Gm**	**Grand Total**
Less than 4acre	14	2	0	0	16
4.01-8acre	35	15	1	0	51
8.01-12acre	4	9	8	0	21
More than 12acre	0	0	2	2	4
Grand Total	53	26	11	2	92
Chi Square Test					
Chi square statistics value		**df**		**Chi square table value (0.05)**	
85.53		**9**		**16.92**	

Level of Satisfaction of Summer Groundnut Farmers Towards Insecticides. The study revealed that farmers expressed high satisfaction with UPL insecticides, particularly regarding quality (mean score: 3.78), packaging (3.61), and brand image (3.51). Moderate satisfaction levels were noted for agri-input dealer support (3.38), availability (3.17), and price (3.02). Among the 92 farmers who used the UPL–Ulala brand, 81.52% reported that its performance and quality were superior to other brands, highlighting strong brand loyalty. Furthermore, 88% of the users recommended UPL products to fellow farmers based on their positive experience with its performance and quality. Regarding pricing perceptions, 47.5% of farmers considered insecticide prices to be high, 37% found them moderate, and only 15.5% perceived them as low, indicating that cost remains a concern for nearly half of the respondents.

Table 5: Satisfaction level of farmers towards UPL insecticides.

Satisfaction level of farmers	HS (5)	S (4)	MS (3)	DS (2)	HDS (1)	CS	Mean	Rank
Dealer support	29 (145)	19 (76)	15 (45)	16 (32)	13 (13)	311	3.38	IV
Packaging	35 (175)	18 (72)	17 (51)	13 (26)	9 (9)	333	3.61	II
Availability	25 (125)	18 (72)	14 (42)	18 (36)	17 (17)	292	3.17	V
Price	23 (115)	20 (80)	10 (30)	16 (32)	21 (21)	278	3.02	VI
Brand image	32 (160)	17 (68)	20 (60)	12 (24)	11 (22)	323	3.51	III
Quality	37 (185)	21 (84)	19 (57)	7 (14)	8 (8)	348	3.78	I

Note: Highly Satisfied (HS): 5 Satisfied (S): 4 Moderately Satisfied (MS): 3 Dissatisfied (DS): 2 Highly Dissatisfied (HDS): 1
Cumulative Score (CS) = Maximum Scale × No. of Farmers
Mean = Cumulative Score (CS) / Total No. of Farmers (92)

SUGGESTIONS

The study revealed that all farmers purchased insecticides from local agri-input dealers or retailers, and a significant portion gained awareness about insecticides through these dealers. Therefore, it is recommended that companies implement more dealer-focused promotional strategies, such as exclusive schemes, training, and dealer loyalty programs, as dealers are the most influential channel for reaching farmers.

A large number of farmers depend on credit-based purchasing, particularly those with lower income levels. To support this, companies should offer flexible credit terms to dealers, enabling them to extend better credit facilities to farmers, which can improve purchasing capacity and trust in the brand.

Since price sensitivity was evident among farmers, especially with 47.5% reporting insecticides as high-priced, it is advised that companies adopt competitive pricing strategies and provide seasonal discounts or loyalty offers to make their products more affordable to small and marginal farmers.

CONCLUSIONS

The study explored farmers' brand preferences, purchasing behavior, and satisfaction regarding insecticides used in summer groundnut cultivation in Jamnagar district, Gujarat. Most respondents were small landholders practicing irrigated farming, with a preference for UPL–Ulala insecticides, followed by Swal–Panama and FMG–Beleaf. Key factors influencing brand choice included price, quality, prior experience, and peer recommendations. Credit availability, smaller pack sizes, and dealer influence played significant roles in purchasing decisions. Despite concerns over pricing, farmers reported high satisfaction with UPL products and showed willingness to recommend them. The findings suggest that affordability, product performance, and trusted information sources are crucial in shaping farmer decisions. Companies should focus on competitive pricing, flexible credit, and farmer-focused promotion to strengthen market engagement.

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