

International Journal of Agriculture Extension and Social Development

Volume 9; Issue 6; June 2026; Page No. 142-146

Received: 19-04-2026
Accepted: 23-05-2026

Indexed Journal
Peer Reviewed Journal

Buying behavior and satisfaction level of cotton growers towards herbicides in Surendranagar District of Gujarat

¹Het J Acharya, ²Mehul G Thakkar and ³Tejas N Patel

¹Research Scholar – MBA (Agribusiness Management), Navsari Agricultural University (NAU), Navsari, Gujarat, India

²Major Guide, Professor & Head in HRM and University Placement & Counselling Head, Navsari Agricultural University (NAU), Navsari, Gujarat, India

³Research Associate, Navsari Agricultural University (NAU), Navsari, Gujarat, India

DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i6b.3673>

Corresponding Author: Het J Acharya

Abstract

This empirical research study, utilizing the published theoretical literature and descriptive cross-sectional research design, examines the buying behavior and satisfaction level of cotton growers towards herbicides. The study was conducted in the purposively selected Surendranagar district of Saurashtra region of the vibrant state of Gujarat. The research involved a structured survey of 100 cotton growing farmers selected through simple random sampling across ten villages of the purposively selected Lakhatar taluka of Surendranagar District of Gujarat, which was selected due to its significant cotton cultivation area. The objectives were to analyze farmers' socio-economic profiles, herbicides buying behavior, satisfaction level and the constraints faced during buying. The findings revealed that the majority of farmers were aged between 41–50 years, with education levels ranging from below SSC to HSC. Most farmers were small, semi-medium farmers and marginal; holding less than 4 hectares of land, with farming experience of over 20 years and an annual income between ₹1,00,000 to ₹6,00,000. Dealers and agro service centres were the main source for purchasing herbicides, with buying decisions influenced by price, past experience, dealer recommendations, and progressive farmers' opinions. Farmers preferred packaging sizes of 500 ml and 1000 ml and most of the farmer applied herbicide only once in a season. Key challenges included high prices, lack of technical knowledge, and inappropriate packaging size. The study recommends ensuring availability of product on online platforms. Additionally, company should focus on dealer based promotional schemes. Organizing field demonstrations, farmers' meeting, and having well-designed stalls in exhibitions will also support better-informed and safer herbicide use in Cotton farming by the growers in the study region.

Keywords: Agrochemicals, buying behavior, constraints, cotton growers, herbicide, Surendranagar District

Introduction

Agriculture is the foundation of India's rural economy, employing over 54% of the population and contributing 18.3% to the national Gross Value Added (GVA), with cotton standing as one of its most economically significant cash crops (Ministry of Agriculture and Farmers Welfare, 2024). Gujarat, being the largest cotton-producing state in India, approximately 35% of the country's total cotton output, with Surendranagar district historically recognized as the "Cotton Bowl of Gujarat" due to its highly suitable black cotton soils and semi-arid agro-climate (Cotton Corporation of India, 2023). Within Surendranagar, Lakhatar taluka represents a key cotton-cultivating micro-region where the majority of smallholder and marginal farmers depend entirely on cotton as their principal Kharif crop and primary source of household income. Weed infestation poses the most severe and consistent agronomic threat to cotton productivity in this region, causing yield losses of 40–80% under unmanaged conditions during the critical first 45–60 days of crop growth (Indian Council of Agricultural Research, 2024). Gujarat, a leader in the chemical and agrochemical industry,

significantly contributes to India's pesticide output and consumption/usage. Cotton (*Gossypium hirsutum* L.) is a major cash crop in Surendranagar district. However, cotton cultivation is increasingly threatened by weed infestation. In response, farmers rely on herbicides. Here, farmers' buying behavior and usage of herbicide is significantly influenced by their socio-economic condition, buying pattern and overall satisfaction with the product. This study insights aim to promoting field-level awareness programs, strengthen dealer networks and improve online buying accessibility of quality crop protection inputs for cotton growers in the region.

Review of Literature

The review of literature provided a comprehensive understanding of prior research relevant to cotton grower's socio-economic conditions, herbicide buying behavior, satisfaction level, and perceived constraints. This foundation helped in defining the existing knowledge gaps and guided the present investigation.

Kaur and Sharma (2025) ^[6] examined the socio-economic status of 120 cotton farmers in Bathinda and Mansa districts

of Punjab and reported that most farmers were aged between 30-40 years, educated up to matric or senior secondary level, and belonged to medium landholding categories with considerable farming experience. Agriculture was the primary occupation for the majority, with little involvement in secondary activities. The study highlighted that cotton remains an important cash crop, but farmers face challenges such as limited diversification, dependence on traditional practices, and lack of adequate technological (Jaipal, 2023) [5] and policy support.

Dongarwar *et al.* (2025) [4] examined constraints faced by 140 cotton growers in pesticide use and pest management in Warora and Bhadravati talukas of Chandrapur district, Maharashtra. They found that most farmers were middle-aged, educated up to higher secondary level, and had medium farming experience with marginal landholdings. The major challenges included high costs of labor, pesticides, and equipment, lack of training on improved practices, and difficulty in identifying harmful and beneficial insects. Limited access to bio-pesticides and poor awareness of pesticide safety were also significant issues. The study emphasized the need for affordable inputs, better training, and increased awareness to promote safe and sustainable cotton cultivation.

Murthathi, Thakkar and Sharma (2025) [7] in their landmark study conducted in Kurnool district of Andhra Pradesh with a sample of 200 farmers, reported that the major five constraints faced by farmers include high prices of insecticides, poor product quality, lack of discounts, fear of adulteration, and limited product availability. These challenges indicate ongoing concerns regarding affordability, authenticity, and access to reliable agricultural inputs. Actionable recommendations of enhancing dealer networks, promoting peer learning, building trust of farmers and ensuring consistent product performance can positively impact farmer decision-making. Simultaneously, addressing key barriers such as pricing, quality assurance, and timely availability is essential to encourage wider adoption and effective usage of insecticides. The insights from this research can inform agrochemical companies, policymakers, and extension services in developing farmer-centric strategies that support sustainable and efficient agricultural practices.

Bhalodiya and Thakkar (2024) [2] assessed brand preferences and satisfaction levels of 150 cotton farmers and 30 pesticide dealers using a multistage sampling method in Rajkot district of Gujarat. The findings showed that farmers' preferences were mainly influenced by dealer recommendations, followed by pricing and past experience, while advertisements had minimal impact. Dealers preferred brands offering better margins, timely availability, and credit facilities. Farmers were generally satisfied with product availability and yield benefits but expressed concerns about high costs, adulteration, and limited technical knowledge. Higher prices and fear of adulteration were found to be the main constraints perceived by farmers in the purchase of cotton pesticides. The study highlighted the strong influence of dealers and emphasized the need for better dealer engagement and farmer training to improve adoption and trust.

Dabhi and Thakkar (2024) [3] in their pioneering study on "Awareness, Buying Behaviour and Constraints of Farmers

for Fungicides in Botad District of Gujarat"; found that dealer recommendation followed by past experience and price were the most influencing factors for purchase of fungicides in the study region. They also suggested that the companies should therefore emphasize on dealer relationships and strongly recommended the companies to focus on having dealer oriented sales promotion schemes, as they have been the prime influencers for the farmers. Using past positive experiences and keeping competitive pricing of the products were also emphasized.

Jaipal *et al.* (2023) [5] examined hygiene practices among 120 cotton growers in Padampur and Suratgarh blocks of Sriganganagar district, Rajasthan; and found that most respondents were middle-aged, literate, and belonged to nuclear families, with a majority being marginal farmers having low annual income. The study also found low levels of social participation and economic motivation among farmers. These findings highlight the need for better extension services, financial support, and awareness programs to improve cotton cultivation practices.

Padaliya *et al.* (2023) [8] conducted a study in the Saurashtra region of Gujarat to assess cotton growers' perception of pesticide usage, surveying 144 farmers across Rajkot, Amreli, and Jamnagar districts. The results showed that only a small proportion of farmers had a high or very high level of perception, while many had moderate understanding. Factors such as education, farming experience, income, and access to information positively influenced perception, whereas age had a negative effect. The study emphasized the need for targeted training and extension programs to promote safe and sustainable pesticide use among farmers.

Ambhure *et al.* (2023) [1] conducted a study in the Marathwada region of Maharashtra to assess the socio-economic status of 120 Bt cotton growers in Parbhani district. The findings showed that most farmers were middle-aged, educated up to high school, and had medium landholdings with moderate area under Bt cotton cultivation. A majority also reported medium levels of annual income, social participation, and economic motivation. The study highlighted the importance of understanding farmers' socio-economic conditions for effective policy planning and improvement of cotton farming practices.

Priyadarshini *et al.* (2022) [10] conducted a study of 120 cotton farmers in Bhadravati Kothagudem district of Telangana. The findings revealed that most farmers were middle-aged, had education up to middle school, and possessed small landholdings with moderate farming experience. Many farmers depended on supplementary occupations due to low-income level and limited economic strength. The study highlighted issues such as pesticide dependence and low profitability, emphasizing the need for better extension services, input systems, and supportive marketing policies.

Radadiya (2021) [11] conducted a study in Gir-Somnath district to assess the awareness and satisfaction of Glyzeel herbicide users among 120 farmers. The findings indicated that most farmers had a medium level of awareness and preferred the product due to its effectiveness and availability. Purchase decisions were influenced by factors such as landholding, product quality, and promotional activities, while satisfaction depended largely on product

performance and dealer service. However, issues like high cost, limited availability, and inconsistent performance were major concerns affecting overall satisfaction.

Parmar *et al.* (2020) ^[9] conducted a study in Junagadh and Rajkot districts of Gujarat to analyze consumer behavior and satisfaction towards herbicides among 130 farmers. The findings showed that farmers had a highly positive perception, especially regarding product quality, packaging, and effectiveness. Purchase decisions were mainly influenced by cropping area, brand image, and prior experience, while advertisements had a negative impact. The study concluded that product performance and trust play a key role in satisfaction, emphasizing the need for performance-based promotion and farmer-focused strategies.

Methodology

The present research was conducted in Lakhatar taluka of Surendrangar District of Gujarat, selected due to its significant Cotton cultivation area. A descriptive cross-sectional research design was employed to analyze various factors influencing cotton growers' buying behavior, satisfaction level, and perceived constraints regarding herbicides.

Both primary and secondary data collection methods were used. Primary data was collected through a structured interview schedule administered to 100 Cotton farmers, while secondary data was obtained from company records, reports, research articles, and relevant websites.

A multi-stage sampling technique was adopted for sample selection. Lakhatar taluka was chosen purposively from the district. From Lakhatar taluka, ten villages were selected randomly, and ten cotton farmers from each village were chosen purposively; leading to a total sample size of 100

respondents.

Analytical methods included tabular presentation, along with simple statistical tools such as percentages, frequency distribution, mean scores, and Likert scale ratings.

This methodology aimed to provide a clear, data-driven understanding of cotton growers' buying behavior and satisfaction level related to herbicide, combining both qualitative and quantitative techniques for robust and reliable results.

Results and Discussion

Socio-Economic Profile of Cotton Growers

The socio-economic profile analysis revealed that the highest proportion of cotton growers (38.5%) were in the age group of 41–50 years, followed by (33%) in the above 50 year category, indicating that middle-aged individuals are most actively involved in cotton cultivation. Most of the respondents (45%) had more than 20 years of farming experience, suggesting a strong base of agricultural knowledge among the farming community. Regarding occupation, (56%) of the farmers were involved only in farming, highlighting the source of income. Landholding data showed that (42%) were small farmers (1.01–2.00 ha), followed by (21%) semi-medium farmers (2.01–4.00 ha), and (20%) marginal farmers (Up to 1ha). A significant majority (84%) practiced irrigated farming, relying primarily depends on Bore well (40%). Canal as source of irrigation was used by only a few farmers, and river was not reported at all. In terms of annual income, (35%) of the farmers earned between ₹1,00,001 to ₹2,00,000, followed by (25%) in the ₹2,00,001 to ₹4,00,000 range. Cotton cultivation area was generally limited, with (43%) cultivating less than 1 ha and (37%) cultivating 1–2 ha.

Table 1: Socio-Economic Profile of Cotton Growers

Variable	Parameter	Frequency	Percentage (%)
Age Group	21–30 years	9	9.00
	31–40 years	20	20.00
	41–50 years	38	38.00
	Above 50 years	33	33.00
Education Level	Below SSC	60	60.00
	SSC	24	24.00
	Diploma	4	4.00
	HSC	12	12.00
Farming Experience	Graduate	0	0.00
	Below 5 years	6	6.00
	5 – 10 years	18	18.00
	11 – 20 years	31	31.00
Occupation	Above 20 years	45	45.00
	Farming	56	56.00
	Farming + AH	25	25.00
	Farming + Service	8	8.00
Landholding Size (Ha)	Farming + Business	11	11.50
	Marginal (up to 1 ha)	20	20.00
	Small (1.01–2.00 ha)	42	42.00
	Semi-medium (2.01–4.00 ha)	21	21.00
	Medium (4.01–10.00 ha)	14	14.00
Type of Farming	Large (more than 10 ha)	3	3.00
	Irrigated	84	84.00
Source of Irrigation	Rainfed	16	16.00
	Bore well	34	40.00
	Canal	26	31.00
	Open well	18	21.00

	River	0	00.00
	Other	6	7.00
Annual Income (₹)	Below ₹1,00,000	15	15.00
	₹1,00,001 – ₹2,00,000	35	35.00
	₹2,00,001 – ₹4,00,000	25	25.00
	₹4,00,001 – ₹6,00,000	15	15.00
	Above ₹6,00,000	10	10.00
Area Under Cotton Cultivation	Up to 1 ha	43	43.00
	1–2 ha	37	37.00
	2.01–4 ha	15	15.00
	4.01–10 ha	5	5.00
	Above 10 ha	0	0.00

Buying Behavior of Cotton Growers towards Herbicides

The study found that the most influential sources for buying herbicides were Retailers' Suggestion (94.73%), followed by Farmer and friends' suggestion (85%), and Farmer meeting (69.73%). When determining herbicide application, (62.06%) of farmer were using once in a season followed by (25.86%) twice in a season and only (12.06%) thrice in a season. All farmers purchased herbicides from local dealers or retailers, while no one was found using online/digital platform. Payment modes varied, with (41.37%) using credit facility, (31.03%) using both cash and credit, and (18.96%) using only cash. The preferred pack sizes were 1000 ml (55.17%) and 500 ml (32.75%), reflecting a preference for medium-sized packaging. Among the factors considered for buying, Past Experience with the product received the highest average score (mean = 3.78), followed by Product Price (3.47), Dealer Recommendation (3.33), Progressive farmer opinion (3.19) and brand image (3.00).

Table 2: Factors considered by cotton growers while buying herbicides

Factors	HI (5)	I (4)	N (3)	SI (2)	NI (1)	CS	Mean	Rank
Brand image	10	12	14	12	10	174	3.00	VI
Price	16	15	12	10	5	201	3.47	II
Progressive farmer opinion	14	13	10	12	9	185	3.19	IV
Credit Facility	11	10	16	14	7	178	3.07	V
Past experience	20	18	10	7	3	219	3.78	I
Dealer Recommendation	15	12	14	11	6	193	3.33	III

Highly Important: 5, Important: 4, Neutral: 3, Somewhat Important: 2, Not Important: 1

Cumulative Score (CS) = Maximum Scale × No. of Farmers

Mean = Cumulative Score (CS) / Total No. of Farmers

Satisfaction Level of Cotton Growers towards herbicides

The satisfaction levels of cotton farmers toward herbicides varied across different factors. Among these, product performance emerged as the most satisfactory aspect with the highest mean score (3.70), followed by availability (3.60) and dealers' support (3.57), indicating that farmers were generally pleased with the effectiveness, accessibility, and support services related to the product. Packaging size received a moderate level of satisfaction (3.45), However, price was identified as the least satisfactory factor with the lowest mean score (3.05), highlighting cost as a major concern among farmers. Overall, while the herbicide performs well and is reasonably accessible, issues related to pricing and packaging somewhat limit the overall satisfaction of farmers.

Table 3: Satisfaction Level of Cotton Growers towards herbicides

Factors	HS (5)	S (4)	N (3)	DS (2)	HDS (1)	CS	Mean	Rank
Dealers' Support	20	14	9	7	10	207	3.57	III
Packaging Size	18	13	12	9	6	200	3.45	IV
Availability	21	15	8	6	8	209	3.60	II
Price	11	12	15	11	9	177	3.05	V
Product Performance	21	16	9	7	5	215	3.70	I

HS= Highly Satisfied: 5; S= Satisfied: 4; N = Neutral: 3; DS = Dissatisfied: 2;

HDS= Highly Dissatisfied: 1

Cumulative Score (CS) = Maximum Scale × No. of Farmers

Mean = Cumulative Score (CS) / Total No. of Farmers

Constraints as perceived by Cotton Growers while buying herbicide

The primary constraints perceived by the cotton growers in buying herbicides included the high price of products, which had the highest mean score (3.87), followed by lack of technical knowledge (3.58), and inappropriate packaging size (3.33). Other reported constraints included a fear of adulteration, timely unavailability of product and poor product quality. These barriers significantly impacted farmers' buying decisions and the efficiency of weed management in cotton cultivation.

Table 4: Constraints as perceived by Cotton Growers while buying herbicide

Constrain perceived by farmers	HA (5)	A (4)	N (3)	D (2)	HD (1)	CS	Mean	Rank
High price	23	19	7	4	5	225	3.87	I
Timely unavailability of product	10	11	17	12	8	177	3.05	V
Poor product quality	5	8	10	13	18	163	2.81	VI
Lack of technical knowledge	17	12	10	20	5	208	3.58	II
Fear of adulteration	12	15	8	13	10	180	3.10	IV
Inappropriate Packaging Size	15	12	14	11	6	193	3.33	III

HA= Highly Agree: 5; A= Agree: 4; N = Neutral: 3; D = Disagree: 2; HD= Highly Disagree: 1

Cumulative Score (CS) = Maximum Scale × No. of Farmers

Mean = Cumulative Score (CS) / Total No. of Farmers

Suggestions

The insights developed from the data analysis paved the way for major suggestions for the companies looking for larger acceptance and adoption of their herbicide products among the farmers; and thereby increasing market share in this region.

These major suggestions are

The companies need to increase awareness about various products being available online, as survey shows that no farmer buys products from online/digital platforms.

Most farmers buy herbicides from dealers. Therefore, the companies should focus on dealer-based promotional schemes, as dealers are the main source of information for farmers.

The survey found that fewer farmers got aware about herbicides through field demonstrations, farmers' meetings and exhibitions. Therefore, the companies should prioritize organizing more farmers' meetings in rural areas, conducting more field demonstrations by field staff and setting up more stalls in exhibitions.

High price and lack of technical knowledge of herbicides were reported as major constraints. Companies should focus on field demonstrations and other promotional activities in order to create more awareness and to increase technical skill among the farmers.

As such the constraint of high price can't be dealt directly, but efforts should be made to rationalize the pricing strategy.

Conclusion

This study on the buying behavior and satisfaction level of cotton growers towards herbicide in Surendranagar District of Gujarat reveals that cotton farming in the region is predominantly carried out by experienced male farmers above 40 years of age, belonging mostly to small and marginal landholding categories with limited formal education and modest incomes, yet with considerable access to irrigation facilities. All purchasing occurring exclusively through agro-service centers, indicating that online and digital channels have not yet penetrated this market. Among the key factors influencing herbicide purchase decisions, past experience ranked the highest, followed by price and dealer recommendation; reflecting farmers' strong reliance on firsthand knowledge and trusted local networks rather than advertising or brand image. At the same time, credit-based purchasing highlighted the financial dependency prevalent among the farming community. Satisfaction levels were generally positive, with product performance and availability receiving the highest ratings, though price satisfaction remained comparatively low, consistent with the major constraints namely high product cost, lack of technical knowledge, and inappropriate packaging size along with concerns over adulteration and timely availability. In light of these findings, it is recommended to strengthen rapport and relationships with farmers through field demonstrations, farmer meetings, and dealer-incentive schemes; while also exploring flexible packaging options, competitive pricing strategies, and gradual development of online sales channels to improve accessibility, build farmer trust, and drive sustainable growth in herbicide adoption across the region.

References

1. Ambhure AL, Suman S, Saha S. A study on socio-economic status of Bt cotton growers of Marathwada region of Maharashtra. *Biological Forum – An International Journal*. 2023;15(10):478-481.
2. Bhalodiya J, Thakkar MG. Brand preferences and satisfaction level of farmers and dealers' preferences for cotton pesticides in Rajkot district of Gujarat. *Biological Forum – An International Journal*. 2024;16(9):85-91.
3. Dabhi DG, Thakkar MG. Awareness, buying behaviour and constraints of farmers for fungicides in Botad district. *Biological Forum – An International Journal*. 2024;16(8):290-295.
4. Dongarwar SS, Ahire MC, Bhute NK, Kadam KR. Constraints faced by cotton growers in following pesticides use, care, and pest management practices. *International Journal of Agriculture Extension and Social Development*. 2025;8(2):5-10.
5. Jaipal, Meena NR, Rajveer, Singh S, Choudhary N. To study the socio-economic status of cotton growers in Sri Ganganagar district of Rajasthan. *International Journal of Statistics and Applied Mathematics*. 2023;8(4):583-585.
6. Kaur L, Sharma S. Socio-economic status of cotton growers in western zone of Punjab, India. *Archives of Current Research International*. 2025;25(1):124-133.
7. Murthi M, Thakkar MG, Sharma SS. Socio-economic determinants and constraints in buying insecticides: Empirical study of farmers in Kurnool district of Andhra Pradesh. *International Journal of Agriculture Extension and Social Development*. 2025;8(8):156-161.
8. Padaliya DA, Jadav NB, Padaliya DN. Perception of cotton growers towards pesticides usage. *Gujarat Journal of Extension Education*. 2023;35(1):26-29.
9. Parmar P, Lakhlani CD, Trivedi SM. Consumer behavior and satisfaction level towards herbicide in Gujarat state. *Journal of Pharmacognosy and Phytochemistry*. 2020;9(3):2058-2061.
10. Priyadarshini JB, Sinha DK, Ahmed N, Singh KM, Kumar M, Singh SP. Socio-economic status of cotton farmers in Bhadradi Kothagudem district of Telangana. *The Pharma Innovation Journal*. 2022;11(3):1699-1703.
11. Radadiya HR. Awareness and satisfaction among the users of 'Glyzeel' herbicide in Gir-Somnath district. Junagadh (Gujarat): Junagadh Agricultural University; 2021. p. 79.
<https://krishikosh.egranth.ac.in/handle/1/5810183986>.