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Buying Behaviour and Satisfaction Level of Farmers for Hybrid Pearl Millet Seeds in Banaskantha District of Gujarat

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ABSTRACT: This study examines the buying behaviour and satisfaction level of farmers regarding hybrid pearl millet seeds in the Banaskantha district of North Gujarat region of Gujarat state. A structured survey involving 200 farmers across four talukas was conducted using a multistage random sampling approach. The key objectives were to assess farmers' socio-economic backgrounds, investigate their seed-buying patterns and evaluate satisfaction with seed performance. Findings indicate that most farmers were middle-aged males with low formal education and operated on small to medium landholdings. Seed purchasing was primarily through local dealers, with decisions influenced by prior experience, price considerations, and retailer suggestions. Farmers expressed strong satisfaction with seed quality, availability, and service related interactions; whereas yield performance, pest resistance, and brand trust received moderately positive feedback. Price sensitivity emerged as the most dissatisfying factor. Appropriate recommendations have been made to take care of the influencing factors and improve the satisfaction of farmers; ultimately leading to better acceptance and adoption of hybrid pearl millet seeds among the farmers of the study region.

Keywords: Adoption, Buying Behaviour, CRM, Farmer Satisfaction, Hybrid Pearl Millet, Seed.

INTRODUCTION

Agriculture remains a fundamental pillar of India's economy, ensuring food security and providing livelihoods for a large portion of the rural population. Among various agricultural inputs, seeds are the most crucial component in determining crop performance. High-quality seeds contribute significantly to yield improvement - estimated at 15–25% under normal conditions and up to 45% when supported by appropriate agronomic practices. The superior performance of agriculture in India has progressively depended on hybrid technology to improve production. Notwithstanding technological developments and the increasing presence of public and private sector seed corporations, obstacles remain at the grassroots level concerning the acceptance and acquisition of hybrid seeds. As India advances towards becoming a global hub for seed production and innovation, hybrid seed varieties have emerged as a point of attraction due to its potential to offer higher yields, uniform quality, and resilience under varying climatic conditions (Joshi *et al.*, 2025). However, the successful diffusion of hybrid seed technologies depends not only on supply-side advancements but also on understanding demand-side realities, particularly the factors considered by end-users, *i.e.*, farmers while buying and their satisfaction level with the purchased hybrid seed variety.

The Indian seed industry has evolved considerably with the advancement of plant breeding techniques, seed certification systems, and increased public-private participation. It is currently ranked as the fifth largest in the world, reflecting the growing emphasis on quality inputs in Indian agriculture.

Talking about Pearl millet (Pennisetum glaucum), locally known as bajra, it is one of the major cereal crops grown in India, especially in arid and semi-arid regions. It is valued for its ability to withstand high temperatures, drought, and poor soil fertility. Gujarat is a leading producer of pearl millet, with Banaskantha district in North Gujarat region contributing significantly due to its suitable agro-climatic conditions and expanding irrigation infrastructure. Recent years have seen a gradual shift among farmers toward hybrid varieties of pearl millet due to their higher yield potential, better grain quality, and disease resistance. However, the adoption of hybrid seeds is influenced by several factors including seed cost, farmer awareness, brand trust, and access to credit and technical guidance.

In the context of wide scale acceptance and adoption of hybrid pearl millet seeds, it is of paramount importance to study farmers' buying behaviour. Here, buying behaviour refers to the act of consumers obtaining and using goods and services and the decision process that determines these acts. When we think of farmers' buying behaviour, we usually talk about the factor that

farmers consider while making purchase decision. Understanding farmers' buying behaviour for purchase of any agri-inputs in general and for hybrid pearl millet seeds in particular was one of the major aim of this study. This study also focused on assessing the satisfaction level of farmers with hybrid pearl millet seeds in Banaskantha district of Gujarat. It also aimed to examine their socio-economic background, evaluate seed performance from the farmer's perspective, and identify the key constraints faced during seed procurement and crop cultivation.

By providing a detailed understanding of these aspects, the study intends to offer practical insights that can support improved seed adoption, targeted extension efforts, and informed decision-making for sustainable agricultural development in similar agro-ecological regions. The findings will certainly help the companies in the production and marketing business of hybrid pearl millet seeds by strategizing their efforts for becoming market leader on one hand and contributing to farmers' welfare and nation's prosperity on the other by improving the agricultural productivity; measured as the ratio of agricultural outputs to inputs.

LITERATURE REVIEW

A review of existing literature offers valuable insights into previous studies concerning farmer behaviour and satisfaction in relation to hybrid seed usage. It provides a foundation for the present investigation and highlights patterns, gaps, and key influencing factors in agricultural decision-making.

Bhati *et al.* (2016) studied farming households in Banaskantha and reported that socio-economic variables such as education, landholding size, and cropping patterns significantly influenced resource utilization. The majority of respondents were in the middle-age category with limited land access, underscoring the diversity in farming practices based on farm size.

Devi and Bhoi (2022) analysed the adoption of the GAR-13 rice variety in Kheda and noted that younger, better-educated farmers from smaller families with multiple income sources were more inclined to adopt improved seeds. Their research highlighted the critical role of education and involvement in local institutions in shaping agricultural choices.

Sindhuja *et al.* (2022) studied and revealed that most farmers purchased hybrid vegetable seeds from private retail outlets and preferred cash over credit for their purchases. The study also identified yield, price, quality, pest and disease resistance, and agro-climatic adaptability as the major factors influencing farmers' buying behaviour. The results were statistically significant, and the study concluded that understanding farmers' buying behaviour can help in filling the gap between their needs and the products offered in the market.

Kumar and Masih (2023) provided a comprehensive analysis of the market share and factors influencing seed demand for tomato seeds. The study revealed that hybrid seeds were the most popular followed by Syngenta, Shanker, Kalash, Kaveri, Krishidhan, Nuziveedu, and Rasi seeds. Key factors affecting demand included seed quality, availability of fertilizers and agro-chemicals, access to credit facilities, and the use of modern agricultural machinery. The study also highlighted challenges in the tomato seed marketing system, such as high commission charges and limited access to market information.

Ladumor *et al.* (2023) conducted research on fertilizer satisfaction in Kheda district and discovered that product price and performance were the main contributors to farmer satisfaction. This finding implies similar expectations for quality and cost-efficiency in the hybrid seed sector.

Patel and Thakkar (2023) highlighted the changing profile of Indian farmers as they have started using smart phones and internet services. They noted that the progressive farmers of new generation are very techno friendly and when they will prefer smart-work rather than hard-work. They will use digital technologies and digital services very effectively for farming purpose. Consequently, such new age farmers will prefer to use e-retailing of agri inputs, compared to personally going to the dealers for purchasing any of the required agri inputs.

Patel and Thakkar (2023) in their pioneering study focusing on awareness, expectations and usage of agricultural apps by farmers in Banaskantha district of Gujarat; highlighted the changing profile of farmers in Gujarat state with the use of various Agricultural Apps and the wide ranging expectations from the developers of these Apps. So, the farmers of Gujarat are becoming tech savvy and collect information from various sources including the internet and various agricultural Apps and may get less influenced by traditional factors affecting their buying behaviour for various agricultural inputs including hybrid seeds.

Olakiya and Lad (2024) explored cumin seed purchasing trends in Rajkot and found that factors such as age, income, and educational background shaped farmers' buying decisions. High input costs and the need for climate-resilient seeds were identified as common barriers in the hybrid seed market.

Paghdar *et al.* (2024) evaluated farmers' satisfaction with groundnut seeds and emphasized that price, seed quality, brand identity, and dealer influence were key decision drivers. While seed availability was generally satisfactory, pricing remained a concern, revealing the importance of affordability in rural markets.

Nagesia and Thakkar (2024) evaluated farmers' awareness and brand preferences for hybrid tomato seeds in Latehar district of Jharkhand and 'High yield compared to another brand' and 'Quality of fruit compared to other brands' came out to be the most influencing factors; followed by "Resistant to seed borer" and "Dealers' influence on brand" with third and fourth rank respectively. The least influencing two factors were found to be 'Attractive package and unit size' and 'Availability on credit'. Major constraints were found to be 'Market accesses' to sell the produce, 'Infrastructure' like irrigation facility and value addition facility for the produce after harvest and the 'Perceived risk' of climate (untimely rain and hail stones) as well as the diseases.

Aruna *et al.* (2024) reported that Andhra Pradesh dairy farmers had also started adopting and growing the napier bajra hybrid owing to its deep root structure, rapid growth, multi-cut and remarkable yield in terms of both quality and quantity.

Research Gap: In nutshell, there have been plethora of research studies highlighting the factors considered important while making purchase decision for hybrid seeds of different crops, associated buying behaviour of farmers and their satisfaction level. But, there is a dearth of empirical research on buying behaviour and satisfaction level of farmers for hybrid pearl millet seeds, particularly in North Gujarat 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 buying behaviour and satisfaction level of farmers for hybrid pearl millet seeds.

METHODOLOGY

The present study was carried out in Banaskantha district of Gujarat, a region well recognized for its extensive cultivation of hybrid pearl millet. A descriptive research design was adopted to examine factors influencing farmers' buying behaviour and satisfaction levels. The study relied on both primary and secondary sources of data. Primary data were collected through structured interviews with a sample of 200 farmers, while secondary data were obtained from research reports, academic journals, and seed company publications.

Multistage random sampling technique was utilized to select the study area and farmers. Four talukas such as Deesa, Dhanera, Tharad, and Vav were randomly chosen from Banaskantha district based on their active involvement in pearl millet farming. In each taluka, five villages were selected randomly, and from each village, ten farmers growing hybrid pearl millet were interviewed, making a total of 200 respondents.

Data collection was conducted over a period of three months from March to May 2025. For analysis, both descriptive and statistical techniques were employed, including the use of averages, percentages and likert scale to assess and prioritize the buying behaviour and satisfaction of farmers towards pearl millet hybrid seeds.

RESULTS AND DISCUSSION

Table 1: Socio-economic profile of hybrid pearl millet farmers (n=200).

Variables	Parameters	Frequency	Percentage
Gender	Male	200	100.00
	Female	00	00.00
Age	21-30	12	6.00
	31-40	49	24.50
	41-50	82	41.00
	Above 50	57	28.50
Educational qualification	Below SSC	107	53.50
	SSC	38	19.00
	HSC	32	16.00
	Graduation	13	6.50
	Post-Graduation	3	1.50
	Any other	7	3.50
Family type	Nuclear	123	61.50
	Joint	77	38.50
Farming experience	Below 5 years	13	6.50
	5-10 years	46	23.00
	11-15 years	96	48.00
	Above 15 years	45	22.50
Occupation	Farming only	43	21.50
	Farming + Animal husbandry	128	64.00
	Farming + Service	18	9.00
	Farming + Business	11	5.50
Land holding size	Marginal (up to 1 ha)	24	12.00
	Small (1.01 – 2 ha)	81	40.50
	Medium (2.01 – 4 ha)	66	33.00
	Large (more than 4 ha)	29	14.50
Type of farming	Irrigated	163	81.50
	Rainfed	37	18.50
Method of irrigation	Surface	102	51.00
	Drip	20	10.00
	Sprinkler	78	39.00
Annual family income	0 - 1,00,000	14	7.00
	1,00,001 - 2,00,000	34	17.00
	2,00,001 - 3,00,000	68	34.00
	3,00,001 - 4,00,000	53	26.50
	Above 4,00,000	31	15.50

Socio-economic profile of hybrid pearl millet farmers. The socio-economic analysis of the 200 farmers revealed that all were male with the majority (41%) falling within the 41-50 years age group followed by 28.5% aged above 50. Over half (53.5%) of the farmers had education below the SSC level, indicating relatively low formal education. Most belonged to nuclear families (61.5%) and had 11-15 years of farming experience (48%) reflecting established agricultural backgrounds. A significant number (64%) engaged in both farming and animal husbandry and 40.5% were classified as small landholders with 1.01-2 hectares of land. Irrigated farming dominated (81.5%) with surface irrigation being the most common method (51%). In terms of income, the largest group (34%) earned between ₹2-3 lakhs annually, suggesting a moderate-income level among the majority of hybrid pearl millet farmers in the region.

Farmers' buying behaviour towards hybrid pearl millet seeds. The study revealed that farmers purchased hybrid pearl millet seeds from multiple sources, with a majority preferring local dealers, followed by cooperative societies and online platforms. Regarding sources of information, most farmers reported learning about hybrid seeds through farmers' meetings, while advertisements, field demonstrations, agro service centers, and progressive farmers also contributed to their awareness. This indicates that interpersonal and organized extension channels play a significant role in influencing buying decisions.

In terms of payment methods, 34.5% of farmers opted for credit purchases, while 27.5% used both cash and credit. About 20.5% made payments solely in cash, and 17.5% adopted digital payment modes, reflecting a gradual shift towards more flexible and modern payment options. Brand preference showed considerable variation, with 26% of respondents using Pioneer seeds, followed by Sagar Laxmi (22.5%), US Agri (15%), and Nandi (11%). Other brands like Rasi (7.5%), Kaveri (5%), and miscellaneous brands (14%) were also used. This diversity highlights the competitive nature of the hybrid seed market and the varied preferences among farmers in the region.

Factors affecting the buying behaviour of farmers towards hybrid pearl millet seeds. The study identified key factors influencing farmers' buying behaviour towards hybrid pearl millet seeds (Table 2). Among these, past experience emerged as the most influential factor with the highest mean score (3.46), indicating that farmers heavily rely on their previous outcomes when choosing seeds. The price of seeds ranked second (3.31), highlighting its critical role in decision-making, followed by retailer influence (3.16), which underscores the trust placed in local dealers. Advertisement (3.12) and brand image (3.04) also played notable roles in shaping preferences. Timely availability of seeds was moderately important (2.98), while the opinion of progressive farmers had the least impact (2.92), suggesting that personal experience and market-related factors weigh more heavily than peer influence in seed purchasing decisions.

Table 2: Factors affecting the buying behaviour of farmers towards hybrid pearl millet seeds (n=200).

Factors	Highly important	Important	Neutral	Somewhat important	Unimportant	Cumulative Score	Mean	Rank
Price of seeds	58 (290)	43 (172)	33 (99)	36 (72)	30 (30)	663	3.31	II
Progressive farmer's opinion	40 (200)	32 (128)	44 (132)	41 (82)	43 (43)	585	2.92	VII
Past experience	62 (310)	48 (192)	35 (150)	31 (62)	24 (24)	693	3.46	I
Retailer influences	52 (260)	39 (156)	34 (102)	39 (78)	36 (36)	632	3.16	III
Brand image	45 (225)	36 (144)	39 (117)	43 (86)	37 (37)	609	3.04	V
Timely availability of seeds	43 (215)	34 (136)	43 (129)	36 (72)	44 (44)	596	2.98	VI
Advertisement	49 (245)	38 (152)	36 (108)	42 (84)	35 (35)	624	3.12	IV

Note: Highly important: 5; Important: 4; Neutral: 3; Somewhat important: 2; Unimportant: 1
Cumulative Score (CS) = Maximum Scale × No. of Farmers
Mean = Cumulative Score (CS) / Total No. of Farmers (200)

Satisfaction level of farmers towards hybrid pearl millet seeds. The analysis of farmers' satisfaction levels toward hybrid pearl millet seeds (Table 3) revealed that seed quality ranked highest with a mean score of 4.33, indicating a high level of satisfaction among farmers. This was followed by availability of seeds (mean = 4.13) and the behaviour of seed representatives (mean = 4.05), suggesting that timely access and professional interaction significantly influence farmer satisfaction. Packaging also received positive feedback (mean = 3.82), while yield performance ranked fifth (mean = 3.36), showing moderate satisfaction. In contrast, resistance to pests, diseases, and drought (mean = 3.10), brand image (mean = 2.89), and high price (mean = 2.52) scored lower, indicating areas where farmers were less satisfied. Notably, price was the least satisfactory factor, highlighting the sensitivity of farmers to cost-related issues.

Table 3: Satisfaction level of farmers towards hybrid pearl millet seeds (n=200).

Factors	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied	Cumulative Score	Mean	Rank
Behaviour of seed representative	83 (415)	61 (244)	39 (117)	17 (34)	0 (0)	810	4.05	3
Packaging of seeds	72 (360)	51 (204)	49 (147)	25 (50)	3(3)	764	3.82	4
Availability of seeds	87 (435)	67 (268)	32 (96)	14 (28)	0(0)	827	4.13	2
Quality of seeds	102 (510)	66 (264)	28 (84)	4(8)	0(0)	866	4.33	1
High Price of seeds	13 (65)	16 (64)	67 (201)	70 (140)	34 (34)	504	2.52	8
Yield of seeds	49 (245)	39 (156)	57 (171)	45 (90)	10 (10)	672	3.36	5
Brand image	30 (150)	24 (96)	64 (192)	59 (118)	23 (23)	579	2.89	7
Resistance to disease, pest and drought	40 (200)	28 (112)	60 (180)	56 (112)	16 (16)	620	3.10	6

Note: Highly satisfied: 5; Satisfied: 4; Neutral: 3; Dissatisfied: 2; Highly dissatisfied: 1
Cumulative Score (CS) = Maximum Scale × No. of Farmers
Mean = Cumulative Score (CS) / Total No. of Farmers (200)

CONCLUSIONS

Based on the empirical investigation of 200 pearl millet growers from Banaskantha district; carried out to understand their buying behaviour and level of satisfaction towards hybrid pearl millet seeds; it can be concluded that hybrid pearl millet cultivation in the surveyed region is predominantly managed by male farmers aged between 41-50 years, with most having below SSC education and belonging to nuclear families. Majority have 11-15 years of farming experience, practice irrigated farming on 1.01-2 ha landholdings, and supplement their income with animal husbandry. Farmers commonly purchase seeds from local agri-input dealers and rely heavily on farmers' meetings and advertisements for information. Most make payments on credit, and seed brand usage varies widely. Purchasing decisions are mainly influenced by past experience, price and retailer recommendations. Farmers expressed high satisfaction with seed quality, availability, and representative behaviour but showed neutrality towards yield, resistance and brand image, with dissatisfaction regarding price. These findings highlight the need for seed companies to offer fair pricing, transparent quality assurance, and stronger educational outreach through dealer support, field demonstrations and farmer-focused programs to improve adoption and trust in hybrid pearl millet seeds.

RECOMMENDATIONS

1. The study found that most farmers prefer buying hybrid pearl millet seeds from local agri-input dealers, making them the main point of sale and influence. Since farmers rely on dealers for recommendations and decisions, companies should strengthen dealer-focused promotions. Offering schemes, incentives, and CRM training can boost brand visibility and trust of farmers. Local dealers were chosen more often than cooperatives or online platforms, indicating that stronger dealer engagement can expand product reach and improve sales performance.
2. Farmers face difficulties due to high cost of hybrid seeds. To ease this burden, seed companies should offer discounts, flexible pricing options and access to credit-based payments to ensuring better affordability and adoption.
3. Farmers' meetings have emerged as the most preferred source of information. Hence, seed companies should organize regular, well-structured farmers' meetings to educate farmers about hybrid pearl millet seeds. These meetings can be supported by field demonstrations and advertising, which also ranked high, to strengthen learning and increase product awareness across farming communities.

FUTURE SCOPE

For better generalization for other agro-climatic regions of Gujarat as well as other states, similar studies should be replicated in other regions. Further research is also expected on examining the constraints faced by farmers in procurement of hybrid pearl millet seeds in different regions and what remedial actions can be taken; to encourage acceptance and adoption among the farmers.

Conflict of Interest. None.

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