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Farmer's purchasing behavior and satisfaction level towards insecticide for cotton in Mangrol Taluka of Junagadh District, Gujarat

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Abstract

The agriculture sector is vital to the Indian economy, employing over 70 percent of the population directly and indirectly. Despite being a leading global pesticide producer, India has low pesticide consumption due to limited knowledge, resources, and arable land. This results in significant food grain wastage, with 35-45 percent of agricultural production lost to pests, diseases, and inadequate storage. However, India has become the 13th-largest pesticide exporter and the fourth-largest producer of agrochemicals, with a market value of ₹232 billion in 2020. To understand farmers' purchasing behavior and satisfaction towards Insecticide in Mangrol Taluka, Gujarat, a study was conducted, revealing that most farmers were aged 35-45 and had attained a Higher Secondary Certificate education level. There was a gender imbalance, with males comprising 96 percent of the population. Agro-service centers were the preferred purchase destination, with product quality and recommendations influencing farmers' decisions. Customers expressed high satisfaction with Insecticide's performance, yield, cost, quality, and availability. Retailers' suggestions were the most influential promotional activity, followed by demonstrations and wall paintings.

Keywords: Insecticides, cotton crops, purchase behaviour, satisfaction level

Introduction

The agriculture sector plays a crucial role in the Indian economy, directly and indirectly employing and supporting more than 70 percent of the population. Pesticides, including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematocides, and plant growth regulators, are all essential inputs for the sector in its better production and productivity. (Rani *et al.*, 2021) [7] Organo-chlorine (OC) pesticides, once widely used to combat diseases like typhus and malaria, were restricted or banned in many advanced nations after 1960 (Harit, 2019) [2]. Despite being one of the world's leading pesticide producers, India has relatively low pesticide consumption, less than 1 kg per ha, compared to countries like the US and Japan. This low consumption can be attributed to factors such as limited knowledge, resources, and available arable land. However, this poses challenges in reducing food grain wastage, as 35-45 percent of agricultural production is lost due to pests, diseases, and inadequate storage facilities (Aktar *et al.* 2009). India has emerged as the 13th-largest exporter and the fourth-largest producer of agrochemicals globally, following the United States, Japan, and China (Meena, 2019) [3]. The Indian pesticide market was valued at ₹ 232 billion in 2020 (Pathak & Singh, 2020) [6]. Pesticides are used to control pests, weeds, and diseases by applying them to seeds, soil, irrigation water, and crops at approved dilution levels (Negi *et al.*, 2021) [4] Overall, India's reliance on agriculture, coupled with its pesticide production and export capabilities, highlights the importance of effective pesticide management, improved storage facilities, and strategies to minimize food grain wastage in the country (Patel *et al.*, 2020) [5].

With this back drop, a study entitled, "Farmer's Purchasing Behaviour and Satisfaction Level towards Insecticide in Mangrol Taluka of Junagadh District, Gujarat" was conceptualized with four major objectives *viz.*, to study the socio-economic profile of farmers, to study the farmers purchasing behaviour towards insecticide, to study the farmer's satisfaction level of insecticide, and to study effective promotional tools for marketing and development of insecticides. This study was carried out over a period of 2 months. The assigned work was carried out of the selected villages of Mangrol Taluka of Junagadh District, Gujarat.

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Materials and Methods

The study aimed to address the problem statements and objectives through the implementation of a systematic research design known as Descriptive Research Design. This design was chosen to gather information that would effectively describe the phenomenon under investigation. Primary data was collected by administering a semi-structured schedule to respondents residing in selected villages of Mangrol Taluka. A convenience sampling strategy was adopted. The research was conducted in the Junagadh district, situated in western Gujarat, renowned for its Gir sanctuary and Giranar mountain range. This area was chosen as the study location to ensure the relevance and applicability of the findings. The data collection instrument employed was a

semi-structured schedule, which provided the necessary flexibility to capture comprehensive and relevant information. To analyze the collected data and meet the various research objectives, several analytical tools were utilized. Tabular analysis was employed to systematically organize and present the data, facilitating a clear and concise understanding of the findings. The weighted average mean was employed to calculate average scores for different variables, allowing for quantitative assessments of farmers' preferences and opinions. Additionally, Garrett's ranking method was employed to determine the relative importance of various factors influencing farmers' purchasing behaviour and satisfaction levels.

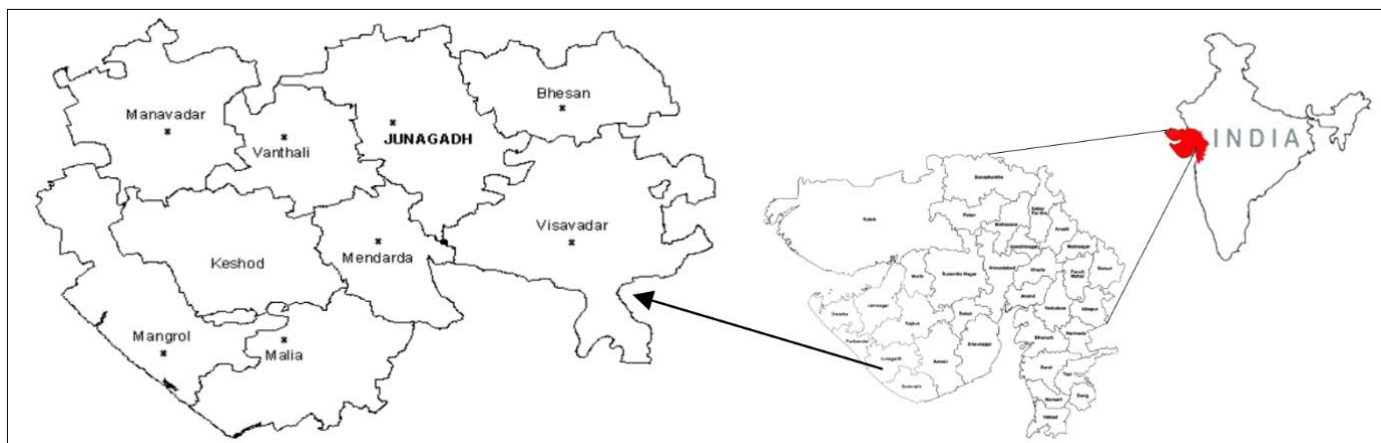


Fig 1: Study Area of the Cotton Crop

Results and Discussion

The table 1 provides an overview of several parameters related to a specific population. In terms of age, the majority of individuals fall within the 35-45 age range, comprising 48% of the population, followed by the 25-35 age group at 22 per cent. When considering education level, the highest proportion lies within the HSC category with 35per cent, closely followed by SSC with 30 per cent. In terms of gender, the population is predominantly male, constituting 96 per cent, while females represent only 4 per cent. Analyzing annual income, the largest group falls within the 5 Lakh-10 Lakh range, accounting for 39 per cent, while those with an income of less than 1 Lakh make up 12 per cent of the population. Family sizes mostly range from 8 to 10 members, encompassing 55 per cent of the population, whereas families with 2-4 members comprise only 7 per cent. Regarding

landholding, the most common category is 2.5 to 5 hectares, accounting for 56 per cent.

In terms of irrigation methods, 67 per cent of the population practices irrigated agriculture, while the remaining 33 per cent relies on rainfed methods. When it comes to purchasing insecticides, the majority (67%) opt for agro-service centers, 29 per cent choose company retail shops, and a small proportion (4%) make online purchases. Furthermore, the suggestions regarding purchasing insecticides predominantly favor agro-service centers, with 82 per cent of respondents recommending them, while company officers, progressive farmers, and gram sevak make up 2 per cent, 11 per cent, and 5 per cent respectively. This table provides valuable insights into the demographic and preference characteristics of the population under consideration, helping to inform decision-making processes in various sectors.

Table 1: Socio-economic profile of Mangrol taluka farmers

	Parameter	Frequency	Percentage (%)
Age	15-25	4	4
	25-35	22	22
	35-45	48	48
	45-55	17	17
	Above 55	9	9
Education Level	Below SSC	18	18
	SSC	30	30
	HSC	35	35
	UG/PG	17	17
Gender Status	Male	96	96
	Female	4	4
Annual Income	<1 Lakh	12	12
	1Lakh-5Lakh	30	30
	5Lakh-10lakh	39	39

	>10 lakh	19	19
Size of the Family	2 - 4 members	7	7
	5 – 7 members	32	32
	8 – 10 members	55	55
	>10 members	6	6
	<1 ha	6	6
Land Holding	1.00 to 2.5 ha	17	17
	2.5 to 5 ha	56	56
	> 5 ha	21	21
Type of Irrigation	Irrigated	67	67
	Rainfed	33	33
Purchase of Insecticides	Agro service center	67	67
	Online purchase	4	4
	retail shop	29	29
Suggestion Regarding Purchasing of Insecticide	Agro service Centre	82	82
	Company officer	2	2
	Progressive farmer	11	11
	Gram sevak	5	5

(Source: Field Survey)

The table 2 provided information on different factors influencing the purchasing decisions of customers. It included the responses from customers in terms of their level of agreement or disagreement with each factor. The factors listed are Quality, Brand image, Price, Past experience, Packaging size, Timely availability, Recommendation by the Agro service center, and others (Ribka *et al.*, 2020)^[8].

The table also included the total number of responses for each factor and calculates the Weighted Average Mean (WAM)

and Rank for each factor. Upon analyzing the data, it was observed that quality ranks the highest with a WAM of 4.31, indicating strong agreement from the majority of customers. Recommendation by Agro service center followed closely with a Weighted Average Mean of 4.18, suggesting its influential role in customers' decision-making process. Brand image and Packaging size receive moderate agreement, while Price, Past experience, and Timely availability had lower agreement levels. Any other factor received mixed responses.

Table 2: Factors Influence to Purchasing of Insecticide for Cotton Crop

Factor	S (1)	A (2)	N (3)	D (4)	SD (5)	Total	Wam	Rank
Quality	58	23	12	6	1	100	4.31	1
Brand image	44	22	16	8	10	100	3.82	4
Price	41	19	24	6	10	100	3.75	6
Past experience	36	21	12	20	11	100	3.51	8
Packaging size	39	23	21	9	8	100	3.76	5
Timely availability	42	32	13	8	5	100	3.98	3
Recommendation by Agro service center	61	16	9	8	6	100	4.18	2
Any other	25	34	25	9	7	100	3.61	7

(Source: Field Survey)

S.D.= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, S= Strongly Agree

The table 3 provided insights into the level of customer satisfaction across various factors. Performance and Yield received the highest levels of satisfaction, indicating positive customer experiences. Cost ranks third, suggesting customers were generally satisfied with the pricing. Quality and

Availability received moderate satisfaction levels. This information can be used by businesses to identify areas of strength and areas for improvement, allowing them to make informed decisions and enhance customer satisfaction.

Table 3: Satisfaction level of the insecticide in cotton crop

Factor	HS (1)	S (2)	N (3)	D (4)	HD (5)	T	Wam	Rank
Cost	48	22	13	9	8	100	3.93	3
Yield	56	21	8	7	8	100	4.1	2
Performance	61	19	6	8	6	100	4.21	1
Availability	35	16	24	18	7	100	3.54	5
Quality	46	19	16	9	10	100	3.82	4

(Source: Field Survey)

HS: - Highly Satisfied; S: - Satisfied; N: - Neutral; DS: - Dissatisfied; HD: - Highly dissatisfied; T: - Total; WAM: - Weighted Average Mean;

The table 4 represented a ranking of factors based on their Garrett values and mean scores. These factors pertain to a certain context and were identified as F₁ to F₁₀. Retailers' suggestion (F₁) emerged as the most influential factor with a Garrett value of 82, earning the top rank. It was closely followed by the factor of Demonstration (F₄) with a Garrett value of 70 and a mean score of 67.06, securing the second

position. Wall painting (F₇) occupied the third spot with a Garrett value of 63 and a mean score of 62.5. The fourth rank was claimed by Farmers/Friends (F₃) with a Garrett value of 58 and a mean score of 61.83. Leaflets (F₂) came in at fifth place with a Garrett value of 52 and a mean score of 54.63. Farmer meeting (F₅) holds the sixth position, garnering a Garrett value of 48 and a mean score of 45.06. Posters (F₉)

and Van campaign (F₆) secure the seventh and eighth ranks, respectively, with decreasing Garrett values and mean scores. TV Advertisement (F₁₀) takes the ninth position, while Exhibition (F₈) claims the tenth and final spot in the ranking.

Table 4: Promotional Activities Influence to Purchasing Insecticide cotton crop

F	Factors	Garrett Score	Mean	Rank
F ₁	Retailers' suggestion	82	77.3	1
F ₄	Demonstration	70	67.06	2
F ₇	Wall painting	63	62.5	3
F ₃	Farmers/friends	58	61.83	4
F ₂	Leaflets	52	54.63	5
F ₅	Farmer meeting	48	45.06	6
F ₉	Posters	42	38.5	7
F ₆	Van campaign	36	34.43	8
F ₁₀	TV Advertisement	29	28.33	9
F ₈	Exhibition	18	24.33	10

(Source: Field Survey)

Conclusion

This study highlighted the presence of middle age respondents with the educational status of higher secondary education, majorly dominated by the males with income status of in between ₹5-10lakhs. The size of the family is around 8 to 10 who cultivated crops of land size of 2.5 to 5 ha through irrigation methods. The majority of farmers purchase inputs from the Agro. service centers. The quality of the products is accepted majorly by the producers as the top most attributes that influence product purchase. Respondents are highly satisfied with the performance and yield of Insecticide. Retailer suggestion regarding product and crop is considered the best promotional measures that influence strongly in the market.

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