



RESEARCH PAPER

Buying behaviour of cotton growers with reference to cotton seed in middle Gujarat

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Abstract : Present study was conducted in middle Gujarat for the estimation of buying behaviour of cotton growers of different size groups for the purchase of cotton seed. A multi-stage sampling design was applied for the study and required data were collected from 120 cotton growers (26 marginal, 19 small, 30 medium and 45 large) spread over 12 villages of 6 talukas, covering three cotton growing districts of the Middle Gujarat during 2011-12. The major methods employed for the analysis were linear multiple regression model and Garrett ranking technique. Brand loyalty among cotton seed growers were influenced by price of the seed, peer group influence, brand image, advertisement and availability of the seed. The most important constraint viewed by the cotton growers was non-availability of the branded seed demanded in desired quantity followed by non-availability of the branded seed in time.

Key Words : Cotton growers, *Gossypium* spp.

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INTRODUCTION

Cotton (*Gossypium* spp.) is one of the most important commercial crops which is considered white gold or king of fibres. In India, commercial cultivation of Bt cotton was approved in 2002, since then there has been a considerable increase in the area under Bt cotton because of its pest resistant characteristics and better yield over earlier varieties. The adoption of Bt cotton has been remarkable in India with around 168-fold increase between 2002-09 (Arora and Bansal, 2011) and its effect was realized on increase in area, production and productivity. The development of Bt cotton contributed in yield improvement of cotton.

In these last ten years, India made the significant growth in area, production and yield of cotton and in this growth the role of the cotton seed has been substantial. Given the fact that sustained growth to cope with increasing demand of cotton would depends more and more on the pace of development and adoption of innovative technologies The seed would continue to be a vital component for decades to come as the sustainable limit in the case of acreage expansion has crossed. The expansion of cotton seed industry has occurred in parallel with growth in cotton acreage, production and productivity. Further, the liberated policies and supportive role of government lead an opening for most of the multinational companies and Indian companies to enter

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into this mega demand based cotton crop to make huge profit through hybrid seed production.

Marketing wing of these seed producing company has a great responsibility that the good quality seeds are made available to the farmers at right time, at right place with required quantities. Hence, it would be necessary for the cotton seed producing firms to develop perspectives on consumers' characteristics, farmers buying behaviour and problem faced by marketers in marketing of cotton seed. It is necessary to identify the factors influencing the buying behaviour of the cotton growers and the driving forces that influence the loyalty towards a particular brand of the cotton growers. Buying behavior involved search of alternatives, evaluation of alternatives, choice decision and past purchase feelings and relations (Mehta, 1974). Buying behaviour is the process wherein individuals decided whether, what, when, where, how and from whom to purchase goods and services. The economic viability of seed industries and efficient marketing system ensures the timely and adequate supply of seeds. However, there are problems faced by the cotton growers in buying of cotton seed. These problems or constraints are crucial issues which need to be identified. This paper aims to understand from whom and how the cotton growers purchased cotton seed, to study the factors influencing the loyalty of the farmers towards brand and to identify the problems faced by the cotton growers of Middle Gujarat in cotton seed marketing.

MATERIAL AND METHODS

To collect the primary data, a multi-stage sampling design was applied. For the purpose of framing the size groups, cotton growers from each of the selected villages were arranged in an ascending order on the basis of their land holdings. They were then stratified into four size groups *viz.*, marginal (upto 1.00 hectare), small (1.01 to 2.00 hectares), medium (2.01 to 4 hectares) and large (above 4 hectares). Then the sample of 10 cotton growers was selected at random from each of the selected villages ensuring proportionate representation of the four strata. Total 120 cotton growers (26 marginal, 19 small, 30 medium and 45 large) from 12 villages of six talukas covering three districts of middle Gujarat *i.e.* Ahmedabad, Vadodara and Kheda were selected randomly. The primary data were collected during the months of March-May 2012 by personal interview method using the pretested questionnaires. The secondary data on area and

production of cotton were collected from the Directorate of Agriculture, Gujarat state, Gandhinagar.

Linear multiple regression model was used to analyze the factors influencing the buying behaviour of the cotton growers

$$L = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + U_i$$

where,

L = Loyalty to the brand

B₀ = Intercept

B₁ to B₇ are the regression co-efficients

X₁ = Price of the seed

X₂ = Availability of preferred brand

X₃ = Peer group influence

X₄ = Quality seed

X₅ = Brand image

X₆ = Influence of advertisement

X₇ = Number of visit for complete transaction

U_i = Error term

Loyalty to the brand (L) :

If a farmer had been using a particular brand for more than one year he was deemed to be loyal to the brand. A score of one was given to a farmer if he had used the brand for one year, two for two year, and three for three year and so on.

A four point scale was constructed to measure the independent variables X₁ to X₇. The score four, three, two and one were assigned as highly satisfactory, satisfactory, moderately satisfactory and not at all satisfactory as expressed by the respondents.

Price of the seed (X₁) :

A farmer would use the same brand repeatedly only if he was satisfied with the price of the brand. Hence, price of the seed (X₁) was included as a variable in this model.

Availability of preferred brand (X₂) :

Availability of preferred brand, at all times would also influence the farmer's loyalty towards the brand. The easy availability of a brand will make the farmers loyalty towards it.

Peer group influence (X₃) :

The friends, neighbors, relatives, extension workers and others were presumed to have influenced substantially the brand choice of the farmers and hence, the same was included as a variable in this model.

Quality seed (X_4) :

The opinion of the cotton growers regarding the quality or efficiency of a particular brand *i.e.* germination percentage, yield, resistant to the bollworms was considered as it was found to influence his loyalty towards it.

Brand image (X_5) :

Brand image is the current view of the customer about a brand. It is a set of beliefs about a specific brand. Brand image conveys emotional value and not just a mental image. Brand image is nothing but an organization's character. Therefore, same was included as a variable in this model.

Influence by advertisement (X_6) :

The advertisement about their brands of cotton seeds by various firms and dealers would influence the farmers to a great deal while choosing a particular brand. Hence, this factor is included in this model.

Number of visit for complete transaction (X_7) :

Sometimes mismatch between demand and supply and improper distribution of seed lead to deficit in fulfilling the quantity demanded. At farmer level, this leads to frequent visit to seed shop by the farmers for purchasing desired quantity of their demanded brand. This has negative influence on the buying behavior and also adds in the cost of production. So this variable was included in the model.

The Garrett ranking technique was used to study the constraints faced by the cotton growers and cotton seed dealers in context to cotton seed marketing. The per cent position of each rank was worked out by using following equation (Sita Devi and Ponnarasi, 2009) :

$$\text{Per cent position} = \frac{100(R_{ij} - 0.5)}{N_i}$$

where,

R_{ij} = Rank given for the i^{th} constraint by the j^{th} individual

N_i = Number of items ranked by the j^{th} individuals.

The per cent position of each rank was converted into the scores according to the table given by Garrett and Woodworth (1971). Then, the scores for each factor were summed over the number of farmers who ranked that factor. In this way total scores were arrived at for each of the factors and mean scores were calculated by dividing the total score by the number of farmers, who gave ranks. These scores for all the factors were arranged in descending order of mean scores, and ranks were given and most important factors were identified.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Purchase decision :

Several factors influence the purchase decisions. The extent of influence of these factors is analyzed in this section.

Source of purchase :

Farmers in the study area purchased cotton seeds from different sources. It was observed that in case of single source of purchase of seed, seed dealers were the most preferable source (26.67 %), followed by seed producer farmers (13.33 %) and village retailers (5.00 %). In case of combination of sources, the most

Table 1 : Sources of purchase of cotton seed by the cotton growers

Sources of cotton seed	Farm size groups				
	Marginal	Small	Medium	Large	All farms
Seed dealers	7 (26.92)	5 (26.32)	7 (23.33)	13 (28.89)	32 (26.67)
Seed producer farmers	5 (19.23)	4 (21.05)	2 (6.67)	5 (11.11)	16 (13.33)
Village retailers	1 (3.85)	1 (5.26)	2 (6.67)	2 (4.44)	6 (5.00)
Dealers + seed producer farmers	5 (19.23)	6 (31.58)	9 (30.00)	13 (28.89)	33 (27.50)
Dealers + co-operative society	2 (7.69)	0 (0.00)	0 (0.00)	3 (6.67)	5 (4.17)
Seed producer farmers + village retailers	0 (0.00)	0 (0.00)	2 (6.67)	0 (0.00)	2 (1.67)
Seed producer farmers + co-operative society	1 (3.85)	0 (0.00)	1 (3.33)	2 (4.44)	4 (3.33)
Dealers + seed producer farmers + co-operative society	4 (15.38)	2 (10.53)	5 (16.67)	5 (11.11)	16 (13.33)
Seed producer farmers + village retailers + self retained seeds	1 (3.85)	1 (5.26)	2 (6.67)	2 (4.44)	6 (5.00)
Total	26 (100)	19 (100)	30 (100)	45 (100)	120 (100)

Note: Figures within the parentheses indicate percentage to total respondents

preferable combination was 'Dealers + Seed producer farmers' (27.50 %) followed by 'Dealers + Seed producer farmers + Co-operative society' (13.33 %). Overall, the most preferable source was 'Dealers + Seed producer farmers' followed by 'Seed dealers'.

Some farmers had both the sources as they had irrigated as well as unirrigated land. It was observed that in unirrigated land, the farmers sow the seed purchased directly from seed producer farmers as they got the benefit of less price, whereas in irrigated land farmers preferred dealers seed (branded seed) considering high yield as well as response of irrigation. Thus combination helped the farmer for better allocation of seed over different type of land. In case of marginal farm size group, major source of seed was 'Seed Dealers' (26.92 %) as marginal farmers were capital strived and dealers advanced credit for purchase of seeds as well as other inputs including pesticides.

Distance travelled :

The highest number of the cotton growers (58.33

%) purchased cotton seed within a radius of 10-20 km. Only 17.50 per cent and 15.83 per cent of cotton growers purchased seed within the area of 0-10 km and 20-30 km, respectively. Thus, the result revealed that cotton growers preferred nearby source *i.e.* within the radius of 20 km for purchase of seed.

Source selection :

Cotton growers purchased cotton seed from different sources by evaluating certain parameters. Quality of the seed was the most important parameter (68.33 %) for deciding source of purchase of cotton seed felt by the cotton growers. The other important parameters *viz.*, timely availability, price comparison with other sources, number of visit for complete transaction and nearness to the farm were felt by the 60.00 per cent, 50.00 per cent, 48.33 per cent and 45.83 per cent of the cotton growers, respectively.

Mode of purchase of cotton seed :

In buying behaviour, it is very essential to know the

Table 2 : Average distance travelled by the cotton growers for the purchase of cotton seed

Average distance traveled (in km)	Farm size groups				
	Marginal	Small	Medium	Large	All farms
0-10	4 (15.38)	5 (26.32)	6 (20.00)	6 (13.33)	21 (17.50)
10-20	16 (61.54)	12 (63.16)	13 (43.33)	29 (64.44)	70 (58.33)
20-30	4 (15.38)	2 (10.53)	6 (20.00)	7 (15.56)	19 (15.83)
30-40	1 (3.85)	0 (0.00)	5 (16.67)	2 (4.44)	8 (6.67)
40 or above	1 (3.85)	0 (0.00)	0 (0.00)	1 (2.22)	2 (1.67)
Total	26 (100)	19 (100)	30 (100)	45 (100)	120 (100)

Note: Figures within the parentheses indicate percentage to total respondents

Table 3 : Factors considered by the cotton growers for the source of purchasing seeds

Factors	Farm size group				
	Marginal (n=26)	Small (n=19)	Medium (n=30)	Large (n=45)	All farms (n=120)
Quality of the seed	19 (73.08)	12 (63.16)	18 (60.00)	33 (73.33)	82 (68.33)
Price comparison with other sources	13 (50.00)	10 (52.63)	16 (53.33)	21 (46.67)	60 (50.00)
Timely availability	15 (57.69)	12 (63.16)	16 (53.33)	29 (64.44)	72 (60.00)
Nearness to the farm	13 (50.00)	8 (42.11)	13 (43.33)	21 (46.67)	55 (45.83)
Number of visit for the complete transaction	11 (42.31)	9 (47.37)	16 (53.33)	22 (53.33)	58 (48.33)

Note: Figures within the parentheses indicate percentage to total respondents

Table 4 : Terms of purchase of cotton seed

Mode of transaction	Farm size groups				
	Marginal	Small	Medium	Large	All farms
Cash alone	11 (42.31)	9 (47.37)	19 (63.33)	27 (60.00)	66 (55.00)
Credit alone	0 (0.00)	0 (0.00)	3 (10.00)	1 (2.22)	4 (3.33)
Cash and credit	15 (57.69)	10 (52.63)	8 (26.67)	17 (37.78)	50 (41.67)
Total	26 (100)	19 (100)	30 (100)	45 (100)	120 (100)

Note: Figures within the parentheses indicate percentage to total respondents

mode of purchase, whether the cotton growers purchase the cotton seed by cash payment or credit or cash and credit basis. This information is presented in Table 4. Majority of the cotton growers (55.00 %) purchased cotton seed on cash payment whereas; only 3.33 per cent of the cotton growers purchased only on credit/deferred payment basis. 41.67 per cent cotton growers could purchase cotton seed on partially cash as well as partially credit/deferred payment basis.

Judgment regarding quality seed :

Cotton growers purchased different brand of cotton seed based on certain parameters. It was found that the most important parameter for judging the quality of the cotton seed was the past experience of the cotton growers in all farm size groups as well as for the sample

as a whole (79.17 %). The other major parameter affecting the judgment regarding the quality seed was faith on sellers, advice of acquaintances, extension approach and seed certification agency tag which were stated by 45.83 per cent, 45.83 per cent, 21.67 per cent and 20.00 per cent of the cotton growers, respectively.

Brand loyalty :

The linear multiple regression technique was used to estimate the factors influencing the cotton growers' brand loyalty using seven independent variables. Out of seven variables, four variables *viz.*, price of the seed, peer group influence, perception of brand image of seed by the farmer and influence of the advertisement were found significant at 1 per cent level of significance and positively related.

Table 5 : Factors affecting judgment regarding quality seeds before purchase

Parameters	Farm size groups				
	Marginal (n = 26)	Small (n = 19)	Medium (n = 30)	Large (n = 45)	All farms (n=120)
Past experience	22 (84.62)	12 (63.16)	22 (73.33)	39 (86.67)	95 (79.17)
Advice of acquaintance	9 (34.62)	10 (52.63)	12 (40.00)	24 (53.33)	55 (45.83)
Seed certification agency tag	4 (15.38)	3 (15.79)	8 (26.67)	9 (20.00)	24 (20.00)
Faith on seller	13 (50.00)	12 (63.16)	16 (53.33)	14 (31.11)	55 (45.83)
Extension approach	8 (30.78)	3 (15.79)	8 (26.67)	7 (15.56)	26 (21.67)

Note: Figures within the parentheses indicate percentage to total respondents

Table 6 : Factors contributing to the brand loyalty among cotton growers

Variables	Co-efficients	Standard error	p-value
Constant	0.84946 (1.21590)	0.69863	0.22658
Price of the seed (X ₁)	0.44553*** (3.77702)	0.11796	0.00026
Availability of preferred brand (X ₂)	0.20311NS (1.46896)	0.13826	0.14465
Peer group influence (X ₃)	0.41703*** (2.91950)	0.14284	0.00424
Quality seed (X ₄)	0.18160NS (1.18752)	0.15293	0.23754
Brand image (X ₅)	0.43337*** (3.17273)	0.13659	0.00195
Influence of advertisement (X ₆)	0.38317*** (3.23923)	0.11829	0.00158
Number of visit for complete transaction (X ₇)	-0.52753*** (-3.90817)	0.13498	0.00016

*** indicate significane of value at P=0.1

NS= Non-significant

Table 7 : Constraints faced by the cotton growers of Middle Gujarat

Rank	Constraints	Score
I	Non-availability of the branded seed demanded in desired quantity	57.07
II	Non-availability of the branded seed in time	54.49
III	Lack of irrigation facilities	52.65
IV	Lack of credit availability	51.37
V	Higher prices of the branded seeds	50.26
VI	Long distance between home/farm and purchase site	49.86
VII	Unreliable quality of the seeds	41.80
VIII	Lack of confidence in new varieties	40.50
IX	Lack of knowledge about foundation, certified and truthfully seeds	36.80
X	Price rise of the seeds over the previous years	31.33

The variable 'number of visit for complete transaction for desired quantity of seed' was found to be highly significant but negatively related with brand loyalty. Thus, the factors peer group influence, perception of brand image of seed by the farmer, influence of the advertisement and number of visit for complete transaction of the seed were found the driving forces for brand loyalty of the cotton seed.

Constraints faced by the cotton growers :

Ten constraints faced by the cotton growers in the purchase of cotton seeds were observed. These constraints were ranked by using Garrett's ranking technique. Among all the ten listed constraints, non availability of the branded seed demanded in desired quantity was ranked first followed by non-availability of the branded seed in time, lack of irrigation facilities, lack of credit facilities, higher prices of the seeds, long distance between home/farm and purchase site, unreliable quality of the seed, lack of confidence in new varieties, lack of knowledge about foundation, certified and truthfully seeds and price rise over the previous year.

Conclusion :

Farmers purchased the cotton seed either by single sources or by the combination of the sources. The major source of purchase of the cotton seed was seed dealers. The cotton growers for the purchase of cotton seed preferred nearby sources *i.e.* within the radius of 20 km. While preferring the source of purchase of cotton seed, cotton growers gave more weight age to the quality of the seed. Timely availability, price comparison with other sources, number of visit for complete transaction and nearness of source from the farm were the other factors influencing the cotton growers to decide the source of purchase. Generally, cotton seed was sold on cash and very limited credit was provided for the purchase of cotton seed. Farmers views about the quality of seed was based on past experience, faith on sellers, advice of acquaintances, information from extension worker and

seed certification tag. Brand loyalty among cotton seed growers were influenced by price of the seed, peer group influence, brand image, advertisement and availability of the seed. Among all the ten listed constraints, non availability of the branded seed demanded in desired quantity was the major constraints faced by the cotton growers.

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