Asian Journal of Agricultural Extension, Economics & Sociology

40(10): 472-478, 2022; Article no.AJAEES.90260
ISSN: 2320-7027

A Study on Farmers' Buying Behaviour of Hybrid Vegetable Seeds in Coimbatore District

K. Sindhuja [a*ϕ], S. D. Sivakumar [a#], M. Chandrakumar [a†] and R. Premavathi [b#]

[a] Department of Agricultural and Rural Management, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu-641003, India.
[b] Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, 641003, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2022/v40i1031099

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/90260

Original Research Article

Received 17 May 2022
Accepted 26 July 2022
Published 29 July 2022

ABSTRACT

This study analyzes the farmers' buying behaviour with reference to hybrid vegetable seeds. The research was carried out in the major six vegetable growing blocks of Coimbatore District, Tamil Nadu. A total of 120 farmers were selected using the simple random sampling method. The major Hybrid vegetables grown in the study area were tomato, gourds, bhendi, chilli and brinjal. Yield, price, quality, pest and disease resistance were the major factors influencing the farmers' buying behaviour of vegetable seeds. Pest and disease attacks and high seed prices were the significant problems that the sample farmers were facing when cultivating hybrid vegetables. Field demonstrations and free samples to vegetable growers were the two most common promotional activities used by hybrid vegetable seed companies.

Keywords: Farmers' buying behavior; factors influencing; hybrid vegetables; problems encountered.

ϕ PG Scholar,
 # Professor,
† Associate Professor,
**Corresponding author: E-mail: sindhuja.kvk@gmail.com;*

1. INTRODUCTION

India is the world's second-largest producer of vegetables. Its diverse climate ensures that all types of vegetables were available. More than 40 different types of vegetables, including cucurbits, cole crops, solanaceous, and others, were grown in the country's various agro-climatic conditions. Potato, onion, tomato, cauliflower, cabbage, bean, brinjal, cucumber, gherkin, frozen peas, garlic, and okra were the most common vegetables grown in India. According to the National Horticulture Database (Third Advance Estimates 2020-21, National Horticulture Board), India produced 197.72 million metric tonnes of vegetables in an area of 10.96 million hectares during 2020-21. Vegetables were an essential part of agricultural diversity and have played a significant role in nutritional security. With shifting food and nutritional security paradigms, vegetable consumption has received considerable relevance. To meet the ever-increasing demand of the Indian population, vegetable production and productivity have increased significantly. It is not possible to increase the area under vegetables to meet the needs due to increasing land pressure from urbanization and industrialization. Although the use of quality seeds for improved varieties of various vegetable crops has resulted in tremendous growth in vegetable production and productivity, the availability of quality seeds on time and at an affordable price remains a major concern [1-3].

As a result of the government's progressive policies, the Indian seed market has undergone significant reorganization. The Seed Development Act of 1988 and the National Seed Policy of 2002 have aided in the improvement of R&D, product development, supply chain management, and quality assurance of Indian seed firms. As a result, India has risen to become the world's fifth largest seed market. Furthermore, the active participation of both the public and commercial firms have been critical in encouraging farmers who previously used outmoded open pollinated varieties to use hybrid seeds. The Indian vegetable seed market is intensely competitive, with the top players accounting for 48.8 percent of the market in 2020. Among the prominent players in this market are Bayer CropScience AG, Syngenta India, BASF SE, UPL Limited, and Mahyco Private Limited.

2. REVIEW OF LITERATURE

Ramaswami [4] concluded that market structure had traditionally been analysed by looking at the market shares of the leading seed firms. Sethi [5] identified the availability of quality seeds as the factor that highly influenced the purchase decision of the farmers. Kumar [6] reported the major constraints faced by the farmers were poor seed quality, picking issues, cost of cultivation, lack of labor, soil and agro-climatic conditions, lack of price stability, time constraints, and lack of credit facilities. According to Kumaresh and Praveena [7], the primary sources of information in the study area were dealers and field officers, followed by neighbors and radio/television. According to Bansal [8], the factors influencing farmers' purchases of hybrid seeds included yield, price, promotion and water requirement. According to Benakatti [9], nearly 50% of farmers prefer private dealers for their purchases due to timely availability, proximity of stores, quality seed material, and technical advice received from private dealers. Gogulamanda [10] concluded that the brand preference in hybrid seeds directly affected the farmers since it influenced the productivity. Hitesh et al. [11] discovered that when purchasing cumin seeds, farmers prioritized quality and yield over price, timely availability, and brand image. Ahmad (2018) reported that the topmost factors to which farmers give preference while buying hybrid seeds were yield potential, wilt resistance, brand image, timely availability and germination percentage of seed. Pandey [12] reported that majority of the farmers were aware of hybrid paddy seed dealers/retailers play an important role in rural marketing for creating demand among hybrid paddy seeds. Mustafiz [13] concluded that lack of market information, poor institutions and arrangements, poor marketing infrastructures, transportation system, and high and unfair profit margin distribution among the value chain actors with little share to the farmers in the vegetable seed market.

2.1 Objective of the Study

1. To analyze the farmers' buying behaviour of hybrid vegetable seeds in the study area.
2. To identify the factors influencing the buying behaviour of Hybrid Vegetable Seeds among farmers.

3. To identify the problems encountered by the farmers in cultivating Hybrid Vegetables.

3. MATERIALS AND METHODS

The research is limited to the highest hybrid vegetable growing regions in the Coimbatore district. Six blocks in the Coimbatore district were chosen based on the area under hybrid vegetable cultivation. Four villages were chosen at random from each block. A simple random sampling procedure was used to select five hybrid vegetable farmers from each village. As a result, a total of 120 hybrid vegetable farmers were selected for the study.

Farmers' primary data was collected through personal interviews using a survey method. For data analysis, descriptive statistics such as percentage mean and cumulative frequency were used. A five-point Likert rating scale and Garett Ranking Method were also used to better understand the factors influencing farmers' buying behavior and problems encountered by the farmers in cultivating Hybrid vegetables. Garrett's ranking technique was used to identify the problems encountered by the farmers in cultivating Hybrid Vegetables. The respondents were asked to assign ranks to the given problem. Based on their experience, respondents were asked to rank the given problem. The respondents' orders of merit were thus converted into ranks using the following formula.

Percent position = $100(R_{ij}-0.5)/ N_j$

Where,
R_{ij} = Rank given for i^{th} reason by j^{th} individual
N_j = Number of reason by the j^{th} individual.

Garrett's table was used to convert the percent position of each rank thus estimated into scores. The scores of individual respondents were then added together for each problem, divided by the total number of respondents whose scores were added, and the mean score was calculated. The average score for each problem was arranged in descending order. The factor with the highest score was deemed the most influential.

4. ANALYSIS AND DISCUSSION

The data collected from the 120 sample farmers were analyzed and the results are presented in the following tables. The analyzed results include demographic characteristics, buying behaviour of hybrid vegetable seeds, factors influencing the buying behaviour of hybrid vegetable seeds and problems encountered by the famers in cultivating hybrid vegetables.

4.1 Demographic Characteristics of the Sample Farmers

The demographic characteristics of the sample farmers play a major role in purchase of hybrid vegetable seeds. The characteristics of the sample farmers includes age, gender, educational qualification, family type, occupation, farming experience in vegetable cultivation, size of the land holdings and source of irrigation. The demographic characteristics of the sample farmers are presented in the Table 1 and Table 2.

From the Table 1, it could be concluded that the majority of the farmers (40 per cent) were between the age of 41-50 years, followed by 33 per cent with more than 50 years of age. The table also reveals that male farmers (83 Per cent) were more than that of female farmers (16 Per cent). The educational qualification of majority of the sample farmers was secondary school education (49 Per cent) followed by primary school education (23 Per cent). Majority of the sample farmers belonged to Nuclear Family type (75 Per cent).

From the Table 2, it could be concluded that the main occupation of majority of the sample farmers (94.17 per cent) was agriculture only and about 5.83 per cent of the sample farmers were involved in agriculture and also some secondary occupation. From the Table, it could also be concluded that majority of the sample farmers had a farming experience of about 11-20 years (42 Per cent) in vegetable cultivation followed by farmers with less than 10 years' experience (34 Per cent). The size of the land holdings of majority of the sample farmers' (70 Per cent) was between 2-5 hectares. The sources of irrigation for the sample farmers were from both bore well and open well (52 Per cent).

4.2 Buying Behaviour of Hybrid Vegetable Seeds among the Sample Farmers

The buying behaviour of hybrid vegetable seeds among the sample farmers was analyzed and the results are presented in the Table 3.

Table 1. Demographic characteristics of the sample farmers

Age of the farmer (Years)	Number of Farmers (n=120)	Percentage to Total
<30	9	7.50
31-40	23	19.17
41-50	48	40.00
>50	40	33.33
Total	**120**	**100**
Gender		
Male	100	83.33
Female	20	16.67
Total	**120**	**100.00**
Educational Qualification		
Illiterate	10	8.33
Primary	28	23.33
Secondary	59	49.17
Diploma	7	5.83
Graduate	16	13.33
Total	**120**	**100**
Family Type		
Joint Family	29	24.17
Nuclear Family	91	75.83
Total	**120**	**100**

Table 2. Characteristics of the sample farmers

Occupation	Number of Farmers (n=120)	Percentage to Total
Agriculture only	113	94.17
Agriculture+ Secondary Occupation	7	5.83
Total	**120**	**100**
Farming Experience in Vegetable Cultivation (in years)		
<10	41	34.17
11-20	50	41.67
21-30	23	19.17
>30	6	5.00
Total	**120**	**100.00**
Size of the land holdings (in Hectares)		
<1 (Marginal)	15	12.50
1-2 (Small)	21	17.50
2-5 (Medium)	84	70.00
Total	**120**	**100.00**
Sources of Irrigation		
Canal	15	12.50
Bore Well	23	19.17
Open Well	20	16.67
Bore Well and Open Well	62	51.67
Total	**120**	**100.00**

From the Table 3, it could be concluded that the majority of the sample famers purchased the hybrid vegetable seeds from private retail outlets (94.17 Per cent) followed by government agri centers (5.83 Per cent). The table also revealed that the majority of the sample farmers purchased the hybrid vegetable seeds through Cash (72.50 Per cent) and only 23.00 Per cent of the sample farmers opt for both cash and credit mode of purchase. The major source of Information about the availability of particular hybrid vegetable seeds was the peer group (86.67 Per cent) followed by the past experience (65 Per cent) of the sample farmers.

Table 3. Buying behaviour of hybrid vegetable seeds among the sample farmers

Source for purchase of Seed	Number of Farmers (n=120)	Percentage to the Total
Private Retail Outlets	113	94.17
Government Agri Centers	7	5.83
Total	**120**	**100.00**
Mode of Purchase		
Cash	87	72.50
Credit	5	4.17
Cash and Credit	28	23.33
Total	**120**	**100.00**
Source of Information		**Percentage**
Seed Company Representatives	18	15.00
Past Experience	78	65.00
Peer Group	104	86.67
Media	6	5.00
***Multiple Responses**		

4.3 Factors Influencing the Buying Behaviour of Hybrid Vegetable Seeds

The factors influencing the buying behaviour of hybrid vegetable seeds were analyzed and the results are presented in the Table 4.

Table 4. Factors influencing the buying behaviour of hybrid vegetable seeds

Factors	Mean	Standard Deviation
Disease resistance	4.78	4.27
High Yield	4.68	4.18
Fruit Quality	4.63	4.13
Output price in the Market	4.58	4.08
Availability of Quality seeds	4.53	4.03
Credit Availability	4.52	4.12
Pest resistance	4.48	4.06
Duration of Crop	4.47	3.97
Peer group Influence	3.63	3.42
Suitability to soil	3.15	11.65
Perishability	2.35	2.06
Advertisement	2.02	5.95
Dealers Influence	1.97	1.71
Salesperson Influence	1.95	1.95
Low Price of seed	1.87	1.53
Brand Loyalty	1.58	1.48
Discounts	1.53	1.08

From the Table 4, it could be concluded that the major factor that influenced the buying behaviour of hybrid vegetable seeds was disease resistance, followed by high yield, fruit quality, output price in the market, availability of quality seeds, credit availability, pest resistance and duration of crops. The factors which least influenced the buying behaviour of hybrid vegetables seeds among the farmers were low price of seed, brand loyalty and discounts. It could be concluded that the seed companies have to look after the disease resistance vegetable seeds for the farmers. The brand loyalty of the farmers towards seed companies was low, as their brand switching behaviour was very high due to non-availability of seeds, low yield, high seed price, pest and disease attack.

4.4 Satisfaction Level of the Farmers towards Hybrid Vegetable Seeds

The satisfaction level of the farmers towards hybrid vegetable seeds was analyzed and the results are presented in the Table 5.

Table 5. Satisfaction level of the farmers towards hybrid vegetable seeds

Factors	Mean	Standard Deviation
Easy Availability of seeds	4.57	4.07
Fruit Quality	3.73	3.50
Price of seed	3.65	3.25
Yield	2.78	2.44
Pest resistance	2.45	2.36
Disease resistance	2.37	2.25
Agro Climatic adaptability	2.35	2.12

From the Table 5, it could be concluded that the sample farmers were highly satisfied with the

Table 6. Problems encountered by the farmers in cultivating hybrid vegetables

Problems	Garrett mean score			
	Tomato (n=52)	Gourds (n=50)	Bhendi (n=18)	Chilli (n=15)
Pest and Disease attack	68.08 (I)	67.30 (I)	69.67 (I)	69.33 (I)
High seed price	63.73 (II)	63.58 (II)	65.39 (II)	63.20 (II)
Low yield	61.04 (III)	60.68 (III)	60.50 (III)	60.13 (III)
Poor germination	47.98 (IV)	49.76 (IV)	43.28 (V)	46.27 (V)
Non availability of credit	46.44 (V)	47.60 (V)	48.28 (IV)	48.87 (IV)
High Interest on credit borrowings	32.71 (VI)	31.40 (VI)	32.56 (VI)	32.20 (VI)
Marketing Problems	30.08 (VII)	29.68 (VII)	30.67 (VII)	30.00 (VII)

(Figures in parenthesis indicates rank)

easy availability of hybrid vegetable seeds, satisfied with fruit quality and price of hybrid vegetable seeds. The sample farmers were highly dissatisfied with the disease resistance of the seed and agro climatic adaptability of the hybrid vegetable seeds in the study area. Hence, the seed companies have to work on pest and disease resistance seeds in order to satisfy the farmers.

4.5 Problems Encountered by the Farmers in Cultivating Hybrid Vegetables

The problems encountered by the farmers in cultivating hybrid vegetables were analyzed and the results are presented in the Table 6.

From the table 6, it could be concluded that the major problem encountered by the sample farmers in cultivating Hybrid Vegetables like tomato, gourds, bhendi and chilli was Pest and Disease attack, followed by High seed price, Low yield, Poor germination and non-availability of credit. For pest and disease attack, the farmers have to follow integrated pest and disease management practices. The major problems of the farmers have to look after by the concerned vegetable seed companies.

5. CONCLUSION

From the study, it could be concluded that the majority of the sample farmers (94 Per cent) purchased their hybrid vegetables seeds from the private retail outlets. Majority (72 Per cent) of the sample farmers were going for cash mode of purchase for their vegetable seeds. The Information regarding the hybrid vegetable seeds, their availability in the market and their performance were obtained mainly from the peer group (86 Per cent). The disease resistance, high yield, and fruit quality were the major factors that influenced the buying behaviour of Hybrid vegetable seeds among the sample farmers. The sample farmers were highly satisfied with the easy availability of hybrid vegetable seeds and highly dissatisfied with the disease resistance of the seeds in the study. The Pest and Disease attack, High seed price and Low yield were the major problems faced by the sample farmers in cultivating the Hybrid vegetables.

6. RECOMMENDATION

The recommendations from the study includes that the seed companies have to do competitor analysis in order know the performance of their product, since there was low brand loyalty and high brand switching behaviour of seeds among the farmers in the study area. The seed companies have to do research and development in order to develop the pest and disease resistance seeds and also to improve the yield performance, germination percentage and fruit quality. The seed companies have to perform some promotional activities like field demonstration, discounts, credit facilities, field day, campaigns etc., in order to increase the sales of hybrid vegetable seeds. From farmer's perspective, they are recommended to go for crop insurance in case of crop failure and disasters.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Muddasir A, Gautam P, Alpesh L. Study on buying pattern and buying behaviour of hybrid castor growing farmers in Aravalli district of Gujarat state. International Journal of Commerce and Business Management. 2018;11(1):38-43.
2. National Horticulture Board, Ministry of Agriculture and Farmers Welfare, Government of India. Area Production Statistics Report; 2021.
   Available: http://nhb.gov.in/Statistics
3. Department of Horticulture and Plantation Crops, Government of Tamil Nadu. Profile of the State and District. Available:https://tnhorticulture.tn.gov.in/stateprofile
4. Ramaswami, Bharat. Understanding the Seed Industry: Contemporary Trends and Analytical Issues, Indian Journal of Agricultural Economics. 2002;57(3):417-429.
5. Tapas Ranjan Sethi. Analysis of Market for Hybrid vegetable seeds in Eastern Orissa. (MBA Thesis submitted to Department of Agricultural and Rural Management, Tamil Nadu Agricultural University, Coimbatore); 2005.
6. Senthil Kumar. An analysis of Farmers Preference for Bt Cotton in Salem District. (MBA Thesis submitted to Department of Agricultural and Rural Management, Tamil Nadu Agricultural University, Coimbatore); 2010.
7. Kumaresh K, Praveena S. Farmers attitude and brand preference of bio inputs with special reference to bio fungicide in Erode district of Tamil Nadu. International Journal of Commerce and Business Management. 2012;5(2):190-196.
8. Bansal NK, Patel PK, Chidanand P. Study on consumer behaviour of the farmers and market potential of hybrid castor seeds in Banaskantha district of Gujarat state. International Journal of Commerce and Business Management. 2013;6(1):18-22.
9. Benakatti TR, Yeledhalli RA, Prakash M, Somanagouda P. A study on farmers buying behaviour of cotton seeds in northern Karnataka. International Journal of Commerce and Business Management. 2014;7(1):110-6.
10. Gogulamanda SK, Samsai T, Praveena S. Brand preference of farmers and dealers towards Bt cotton hybrid seeds in Guntur district of Andhra Pradesh. International Journal of Commerce and Business Management. 2017;10(2):83-8.
11. Rajgor Hitesh, et al. Farmers Buying Behaviour of Cumin Seeds in Banaskantha District of Gujarat State. International Journal of Agriculture Sciences. 2017;9(5):3767-3769.
12. Rashmi Pandey, Senthil Vinayagam, M. Krishnan, Akhila K. Factors Influencing the Buying Behavior of Hybrid Paddy Seed Growers. Asian Journal of Agricultural Extension, Economics & Sociology. 2020;38(8):68-77.
13. Mustafiz S, Nakayasu A, Itabashi M. Marketing of Vegetable Seeds: Practice and Behavioral Inclinations of Vegetable Seed Sellers and Farmers in Selected Areas of Bangladesh. Agriculture. 2021;11(4):364.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/90260