



RESEARCH PAPER

Factors influencing the buying behaviour of cotton farmers towards pesticides in Guntur district of Andhra Pradesh

L. Sravan Kumar* and N.T. Krishna Kishore

Institute of Agribusiness Management, S.V. Agricultural College, Acharya N.G. Ranga Agricultural University, Tirupati (A.P.) India (Email: sravankumar.iabm20@gmail.com)

Abstract : Introduction of high-yielding varieties and fertilizer responsive varieties has influenced the incidence of pests and diseases. To eradicate them farmers are willing to use pesticides which are quick action. As the pest incidence is increased, emergence of new pests there was also an increase in the usage of pesticides. The pre-scheduled survey was done in Guntur district of Andhra Pradesh. A representative sample of 100 farmers were taken for the study. India ranks 4th largest producer of pesticides with an estimated market size of 4.9 billion US dollars after the United States, Japan and China with a market share of 10 percent globally. Cotton ranks 2nd in the consumption of pesticides among agricultural crops. Andhra Pradesh ranks 1st in the production of cotton. The major source of pesticide purchase is from private dealer. The payment method was both cash and credit. The major source of information regarding pesticides was by the pesticide dealers, progressive farmers, pesticide company representatives. The basis for pesticides application was previous usage experience, pesticide dealer recommendations, neighbor farmer recommendation. The farmers had satisfaction towards availability of the choice products, accessibility to input stores, availability of a range of products. The major constraint faced by the farmer was high price, high interest on credit. The overall problems faced by the farmers was lack of usage information, unavailability of product during peak pest incidence.

Key Words : Pesticides, Consumption, Buying, Const, Information

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INTRODUCTION

Introduction of high-yielding varieties and fertilizer responsive varieties has also influenced the incidence of pests and diseases. It is estimated that Insects cause major damage as high as 50 per cent followed by weeds 30-40 per cent and pathogens 24 per cent. Pesticides are the chemicals (natural or synthetic) employed in various agricultural practices to control pests, weeds, and diseases in plants. Pesticides are classified based on their

nature of chemical into herbicides, insecticides, fungicides, rodenticides, nematicides. Pesticides are crucial for increasing production and decreasing losses.

Other options for controlling crop loss due to insect damage, such as the use of various bio pesticides, transgenic technology to generate pest-resistant crop varieties. However, chemical pesticides are chosen over all other alternatives for protecting crops against yield loss. Currently, around 2 million tonnes of pesticides were

used globally, with 47.5 per cent being herbicides, 29.5 per cent being insecticides, 17.5 per cent being fungicides, and 5.5 per cent being other pesticides. Top ten pesticide-consuming countries in the world are China, the United States, Argentina, Thailand, Brazil, Italy, France, Canada, Japan, and India. Moreover, by the year 2020, global pesticide usage was increased up to 3.5 million tonnes.

India, has the largest area under cotton cultivation in the world, and ranks 2nd (19%) in the consumption of pesticides among agricultural crops. Cotton has about 5 per cent gross cropped area in the country but consumes about 36-50 per cent of total pesticides. Cotton farmers' usual solution is to douse crops in Rs. 200-300 crores worth of pesticides annually—Rs. 81.9 crore of which is so toxic that it's classified as hazardous by the World Health Organization. Andhra Pradesh ranks 1st in the production of cotton of 19 lakh bales, cultivated under the area of 6.06 lakh hectares.

Consumption of pesticides is not even and low pesticide consumption has led to crop yield losses. At the same time, excessive use of pesticide causes some ill-effects to crop and humans. To avoid crop losses farmers have to use pesticides at optimum level in appropriate time. To achieve high yields without crop losses, farmers must have proper knowledge about the product and its usage like the right pesticide, right time of usage and the right method of spraying, etc. Therefore, farmers' buying behavior towards pesticides is very important for crop production.

This study was concentrated to understand the factors influencing the buying behavior of farmers to better fulfill the plant protection chemicals market needs of farmers. Hence, this study is taken with the following objectives.

- To study the factors influencing the buying behavior towards pesticides among cotton farmers.

- To identify the constraints faced by the sample cotton farmers in purchasing of pesticides.

MATERIAL AND METHODS

The survey was conducted in Guntur district of Andhra Pradesh the district occupied a pride of place in the consumption of pesticides, area, and production of cotton in the state of Andhra Pradesh. Two mandals were selected randomly among 58 mandals for the study. Five villages were selected from each mandal randomly thus, making a total of 10 villages. From each village 10 farmers were selected randomly, thus making a sample size of

100. The required data relating to the study will be collected from the farmers through a pretested schedule through repeated personal visits.

The collected data were analyzed by using descriptive statistics, Garrett's ranking technique, and Likert's scale for achieving the set objectives of the study.

RESULTS AND DISCUSSION

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

Factors that influence buying behaviour of farmers towards pesticides:

To understand the factors that influencing buying behaviour of farmers different factors were considered as source of pesticide purchase, payment method, choice if price increases, alternate in absence of required pesticide, loyalty of farmers towards dealer and brand etc., The data was collected, analyzed and presented with following sub heads.

Source of pesticides purchase by sample farmers :

Cotton farmers purchases pesticides from a Department of agriculture, private dealer, co-operative society or from online stores. The analysis was shown in (Table 1).

Table 1 : Source of pesticides purchase by sample farmers

Sr. No.	Categories	Frequency	Percentage
1.	Private dealer	82	82
2.	Agricultural department	14	14
3.	Co-operative society	0	0
4.	Online stores	4	4
	Total	100	100

From the Table 1 it shows that among 100 sample farmers 82 per cent of cotton farmers were purchasing pesticides from private dealers, 14 per cent of cotton farmers were purchasing from agriculture department, 4 per cent of cotton farmers are purchasing pesticides from online stores and no sample farmers was purchasing pesticides from co-operative society as they had no co-operative society, the major source of pesticides purchase was from private dealers.

Payment method for purchasing of pesticides :

Payment method for purchasing pesticides is either

by using cash, credit or by both cash and credit. The analysis is presented below, in Table 2.

Table 2 : Payment method for purchasing of pesticides

Categories	Frequency	Percentage
Credit	32	32
Cash	31	31
Credit and cash	37	37
Total	100	100

The Table 2, it shows that among 100 sample farmers, 37 percentage of the farmers were purchasing pesticides by using credit and cash, 32 percentage of the farmers were purchasing pesticides by taking credit and 31 per cent of sample farmers were purchasing pesticides by using cash. It shows, majority farmers purchases pesticides by using both credit and cash.

The alternative choice by the farmers in situations of non-offering of credit by the dealer :

The alternative choice if credit was not available for the sample farmers, was made into different categories namely switch to dealer who provides credit, taking credit from other people, reduce the pesticide quantity, go for the cheaper alternative. The collected details are shown in Table 3.

Table 3 : The alternative choice by the farmers in situations of non-offering of credit by the dealer

Categories	Frequency	Percentage
Switch to dealer who provides credit	53	53
Taking credit from other people	36	36
Reduce the pesticide quantity	6	6
Go for the cheaper alternative	5	5
Total	100	100

From Table 3 it shows that 53 percentage of the farmers preferred to switch to dealer who provided credit, 36 percentage sources credit from other people, 6 per cent of farmers reduces the pesticide quantity application and 5 per cent of farmers go for cheaper alternative. It shows that credit plays an important role while purchasing of pesticides.

Response to change of price in pesticide brands :

According to change in price of pesticides the opinion of purchasing of pesticides by farmers also changes and there were categorized as same brand and same quantity, same brand and reduced quantity, move

to low cost alternative brand. The collected data was analyzed and presented in the Table 4.

From Table 4, it shows that among 100 cotton farmers, 48 respondents voted to use the same brand and same quantity, 46 respondents were in seek of low priced brand and 6 respondents opted to use same brand and reduced quantity. Majority of the respondents wants to use the same brand in same quantity even though there was change of price in pesticides brands.

Table 4 : Response to change of price in pesticide brands

Categories	Frequency	Percentage
Same brand and same quantity	48	48
Same brand and reduced quantity	6	6
Move to low cost alternative brand	46	46
Total	100	100

Farmers' response during the non-availability of choice of pesticides :

Farmers' response when there was unavailability of necessary pesticides was categorized into four categories shift to alternate brand, shift to alternative chemical, acquire from long distance markets, wait for the same chemical. The collected data was analyzed and shown in (Table 5).

Table 5 : Farmers' response during the unavailability of necessary pesticides

Sr. No.	Categories	Frequency	Percentage
1.	Shift to alternate brand	54	54
2.	Shift to alternative chemical	14	14
3.	Acquire from long-distance markets	8	8
4.	Wait for the same chemical	24	24
	Total	100	100

From the Table 5, it shows that out of 100 sample farmers, 54 percentage of farmers changes brand from same dealer, 33 percentage of the farmers always purchases from the same dealer, 7 percentage of sample farmers purchase from the same brand, 6 percentage of farmers purchases the same brand from other dealer. It shows that majority of the respondents changes brand from same dealer.

Factors influencing the quantity in application of pesticides and selection of brands :

Factors regarding quantity of pesticides application and selection of brands were taken and grouped into six

categories namely damage symptoms observed, intensity of pest and diseases, damage level in the field, number of pests per plant, prophylactic action. Farmers were asked to rank the factors. The data obtained was analyzed and presented in Table 6.

Among the factors damage symptoms observed was given rank one with mean score of 65.42, followed by intensity of pests and disease, damage level in the field, stage of crop, number of pests per plant, peer group advising with mean scores of 60.20, 54.86, 53.98, 46.04, 37.08, 30.42, respectively. Prophylactic action was given last rank among the factors.

Level of satisfaction by cotton farmers towards pesticides and support services:

The appropriate parameters for measuring farmers' levels of satisfaction with pesticide use and support services were taken into account, and a five-point rating scale was used to measure farmers' opinions (Table 7).

For the analysis a five point scale was taken. 5, 4, 3,2,1 were taken as scores against highly satisfied, satisfied, moderately satisfied, dissatisfied, highly dissatisfied, respectively. Calculation of mean scores was

done and ranking was given accordingly in descending order.

From Table 7, it shows that the satisfaction levels of respondents towards pesticides. The availability of the choice product was ranked first with mean score of 3.73, followed by the accessibility for input stores with mean score of 3.68. The availability of range of products, dealer awareness of pesticides, value added services provided by Agri input companies, package size available in the market, promotional activities by the Agri input companies, effectiveness of pesticides available in the market are having mean scores of 3.44, 3.34, 3.31, 3.26, 3.10, 2.95, 2.51, respectively. The last rank was given to the cost of pesticides with mean score of 2.51.

Constraints occurred while purchasing of pesticides by cotton farmers :

Constraints occurred to the cotton farmers while purchasing pesticides from the private dealers :

The details regarding the constraints faced by the farmers while purchasing pesticides was collected and summed up to get the total scores. Garrett's mean score was calculated from the total score and rankings were

Table 6: Factors influencing quantity in application of pesticides and selection of brands

Sr. No.	Categories	Total score	Garrett's mean score	Rank
1.	Damage symptoms observed	6542	65.42	1
2.	The intensity of pest and disease	6020	60.20	2
3.	Damage level in the field	5486	54.86	3
4.	Crop stage	5398	53.98	4
5.	Number of pests per plant	4604	46.04	5
6.	Peer group advising	3708	37.08	6
7.	Prophylactic action	3042	30.42	7

Table 7 : Level of satisfaction by cotton farmers towards pesticides and support services

	Highly satisfied		Satisfied		Moderate		Dissatisfied		Highly dissatisfied		Total score	Mean score	Rank
	NR	S	NR	S	NR	S	NR	S	NR	S			
Availability of the choice product	23	115	39	156	28	84	8	16	2	2	373	3.73	1
Accessibility for input stores	33	165	25	100	26	78	9	18	7	7	368	3.68	2
Availability of a range of products	29	145	25	100	19	57	15	30	12	12	344	3.44	3
Dealer awareness of pesticides	12	60	32	128	38	114	14	28	4	4	334	3.34	4
Value added services Agri input company	16	80	36	144	22	66	15	30	11	11	331	3.31	5
Package size available in the market	7	35	38	152	35	105	14	28	6	6	326	3.26	6
Promotional activities of Agri input companies	11	55	26	104	30	90	28	56	5	5	310	3.10	7
Effectiveness of the pesticides available in the market	2	10	32	128	29	87	33	66	4	4	295	2.95	8
Cost of pesticides	4	20	15	60	29	87	32	64	20	20	251	2.51	9

NR: Number of respondents ; S : Scores

Table 8 : Constraints occurred to the respondents during purchasing of pesticides from the private dealers

Sr. No.	Categories	Total score	Garrett's mean score	Rank
1.	High price	7228	72.28	1
2.	High interest on credit	6910	69.10	2
3.	Lack of credit availability	6444	64.44	3
4.	Preferred brands are not available	4800	48.00	4
5.	Spurious products	4652	46.52	5
6.	Offering only credit to specific products	3440	34.40	6
7.	Forced sales of other products with highly demanded pesticides	3434	34.34	7
8.	Poor dealer knowledge about products	3212	32.12	8

Table 9 : Overall constrain/concerns of farmers towards pesticide usage

Sr. No.	Categories	Total score	Garrett's mean score	Rank
1.	Lack of usage information regarding pesticide	6842	68.42	1
2.	Unavailability of the product during peak pest incidence	6172	61.72	2
3.	Lack of information regarding new products	6092	60.92	3
4.	High dependency on pesticides makes farming unviable	3909	39.09	4
5.	Use of pesticides in over dosages making	3680	36.80	5
6.	Increasing resistance of pests towards pesticides available	3251	32.51	6

given according to it. The data was presented in Table 8.

It can be inferred from the Table 8, that the high price of the pesticides was ranked first by the cotton farmers with a mean score of 72.28, as they were finding it difficult in purchasing the pesticides followed by high interest on the credit given to the farmers by the input dealers, with mean score of 69.10. The last rank was given to the poor dealer knowledge about products available in the market with mean score of 32.12. This shows that high price of pesticide, High interest on credit, Lack of credit availability were considered as the primary constraints faced by the farmers. Preferred brands are not available, spurious products, offering only credit to specific products, forced sales of other products with highly demanded pesticides were also important but not as primary. The least importance was given to poor dealer knowledge about products.

Overall constrain/concerns of farmers towards pesticide usage :

The data pertaining to overall problems/concerns of farmers towards pesticide usage was collected from the farmers and Garrett's mean score was calculated. The obtained results were shown in Table 9.

From the above Table 9, it shows that, lack of usage

information regarding pesticides was given rank one by the cotton farmers with Garrett's mean score of 68.42, followed by Unavailability of product during peak pest incidence having Garrett's mean score of 61.72. Lack of information regarding new products, High dependency on pesticides makes farming unviable, use of pesticides in over dosages making were having Garrett's mean score of 60.92, 39.09, 36.80, respectively. The last rank was given to increasing resistance of pests towards pesticide by the sample farmers as with Garrett's mean score of 32.51. This infers that lack of usage information regarding pesticide, unavailability of the product during peak pest incidence, lack of information regarding new products were the primary problem faced by the cotton farmers. High dependency on pesticides makes farming unviable, use of pesticides in over dosages making were secondary constraints faced by farmers. The least importance was given to Increasing resistance of pests towards pesticides available.

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