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RESEARCH ARTICLE

IDENTIFICATION OF CHEMICAL PESTICIDES BUYING BEHAVIOUR OF VEGETABLE GROWERS IN NADIA DISTRICT OF WEST BENGAL

Swarna Sekhar Kumar[1], Hiralal Jana[2] and Debabrata Basu[3]

[1]Ph.D. Scholar- Department of Agril, Extension, Bidhan Chandra Krishi Viswa Vidyalaya, Mohanpur, Nadia, W. Bengal, India; [2]Assistant Professor, College of Agriculture, Burdwan; BCKV, Agricultural Farm, Kalna Road, Burdwan, West Bengal, India; [3]Professor, Department of Agricultural Extension, Bidhan Chandra Krishi Viswa Vidyalaya, Mohanpur, Nadia, West Bengal, India

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ABSTRACT

Agriculture being the backbone of Indian economy has a crucial role to play in the country's economic development. India ranks second worldwide in farm outputs and as a predominant rural economy it shares 50 percent of its work force in agriculture and contribution of agriculture in Indian economy is 18 percent. (India economic survey 2018). Agriculture is of outmost importance for the vast number of people of this country as it is the largest component of India's economic life. Since crop production is being influenced by a large number of factors it is often impossible to measure all possible factors in every crop management unit. But some of these factors need attention in recent times for betterment of our environment. The rapid increase in consumption of pesticide to improve the production and productivity to feed the growing population, leads us to a number of issues which needs attention in recent times. Pesticides should be used judiciously in view of its high social cost as environmental pollution associated with its consumption, production and distribution. Though environmental considerations would warrant the considerations of use of proper pesticides at proper time and time interval in proper doses, the farmers are concerned with private profitability which is not eco friendly and detrimental to the human race. Vegetables are very common diet of the inhabitants of West Bengal. As a result of this, the quality of vegetables we eat is a big factor regarding our health issues. So, we need to understand the pesticide use pattern followed by the vegetable growers. The use pattern will reflect the knowledge of the vegetable growers regarding the spraying mechanism, proper doses, time of spraying and time interval needed to be followed while spraying pesticides, awareness regarding type of damage; identification of pest and proper plant protection measures. Keeping all these in view the present study is designed to identify the buying behavior profile of different groups of vegetable growers in controlling insect, pest and diseases in Nadia district of West Bengal. The present study was conducted in Nadia district of West Bengal. Nadia district was purposively selected for the study and Chakdahcommunity development block of Kalyani sub division was randomly selected for the study. Rautari gram panchayat was selected randomly from all the gram panchayats of Chakdah community development block. Three villages namely Teghara, Ruppur and Rameswarpur was selected purposively as the villages were in close proximity. Complete enumeration of the farmers in the villages was attended. Farmers who were available up to three times were included in the sample. In this way 73 brinjal growers from Teghara, 62 pointed gourd growers from Ruppur and 69 cauliflower growers from Rameswarpur were selected for the study who grow crops in parcels of plots under bigger common field. Buying behavioural profile reveals the description of the behaviour in terms of preferences of the behaviour in terms of preferences of the farmers with relation to various aspects of pesticides purchasing like brand selection, shopping behaviour, product dealer company characteristics, cost consciousness, credit orientation, packaging, consultancy etc. In the study, the buying behavioural profile of chemical pesticides of the different segments of vegetable growers i.e. brinjal growers (Bg), pointed gourd growers (Pg) and cauliflower growers (Cg) was observed in relation to the above mentioned aspects. Therefore, the base level extension agencies should take proper measures on the basis of findings of the study to make their further extension programme more effective and steps should be taken to change the perception of the vegetable growers considering their chemical pesticides buying behaviours.

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INTRODUCTION

The rapid increase in consumption of pesticide to improve the production and productivity to feed the growing population, leads us to a number of issues which needs attention in recent times. Pesticides should be used judiciously in view of its high social cost as environmental pollution associated with its consumption, production and distribution. Though environmental considerations would warrant the considerations of use of proper pesticides at proper time and time interval in proper doses, the farmers are concerned with private profitability which is not eco friendly and detrimental to the human race. Agriculture is of outmost importance for the vast number of people of this country as it is the largest component of India's economic life. Since crop production is being influenced by a large number of factors it is often impossible to measure all possible factors in every crop management unit. But some of these factors need attention in recent times for betterment of our environment. Agriculture being the backbone of Indian economy has a crucial role to play in the country's economic development. India ranks second worldwide in farm outputs and as a predominant rural economy it shares 50 percent of its work force in agriculture and contribution of agriculture in Indian economy is 18 percent.Plant protection may be defined as the adoption of measures to prevent damage to plants from pests, or to arrest, minimize or obliterate it, once it has occurred. It includes the use of physical, mechanical, cultural, biological, chemical and legal measures to control pests. Plant protection is an exercise basically followed in any crop for control of insect-pests, diseases, weeds etc. to avoid economic losses. Reports indicate that the losses range from 20-30% by each of the insect-pests, diseases and weeds, but on an overall estimation, about 30% average cumulative loss by them appears a fair estimate. This resulted in taking suitable control measures to keep these losses to the minimum (Muthuraman and Kumar, 2013). One of the important plant protection measures is the use of pesticides. The term pesticide encompasses all chemical substances used for the control of pests. According to usage they are classified as insecticides, fungicide, herbicide, molluscicides and antibiotics. Most pesticides are used to serve as crop protection products which in general, protect the plants from weeds, fungi, or insects.

The economic implications of the crop damage and crop loss due to pest incidences have forced many Indian farmers to adopt frequent pesticide applications. Pesticides are considered responsible for the agricultural growth as its benefits associated with improved crop yields. That is the reason behind extensive use of pesticides. It has taken place in the last few years. The unnecessary use of pesticide to meet the ever rising quest for higher profit has resulted in several ecological and environmental consequences as well as unsafe practices in farming sector. The percentage of pesticide used on vegetable crops in the country is regularly increasing for the years. From 13-14% of the total pesticide use in the 1990s (Sardana, 2001)it has reached to 21% in 2010-11. Vegetables are very common diet of the inhabitants of West Bengal as well as Indians in general. As a result of this, the quality of vegetables we eat is a big factor regarding our health issues. So, we need to understand the pesticide use pattern followed by the vegetable growers. The use pattern will reflect the knowledge of the vegetable growers regarding the spraying mechanism, proper doses, time of spraying and time interval needed to be followed while spraying pesticides, awareness regarding type of damage; identification of pest and proper plant protection measures. Keeping all these in view the present study is designed to have an assessment of chemical pesticides buying behaviours of vegetable growers. Therefore, the objective was – identification of chemical pesticides buying behaviour of vegetable growers in Nadia district of West Bengal.

MATERIALS AND METHODS

The present study was conducted in Nadia district of West Bengal. Nadia district was purposively selected for the study. Under Kalyani sub-division of this district, Chakdah community development block was selected randomly for the study. Under this block, Rautari gram panchayat was selected randomly from all the gram panchayats. Under Rautari gram panchayat, three villages namely Teghara, Ruppur and Rameswarpur were selected purposively as the villages were in close proximity. Complete enumeration of the farmers in the villages was attended. Farmers who were available up to three times were included in the sample. In this way 73 brinjal growers from Teghara, 62 pointed gourd growers from Ruppur and 69 cauliflower growers from Rameswarpur were selected for the study who grow crops in parcels of plots under bigger common field . In this way total 204 respondents were selected. The reason for selecting the area was • Nadia district is one of the leading vegetable growing areas of west Bengal. • Farmers were habituated in handling different pesticides. • Acquaintance with the local people and language. • The respondents were highly cooperative and responsive. • The concerned areas were easily accessible in terms of transportation for the researcher. • The area was homogeneous in respect of socio-cultural and biophysical conditions which have bearings on crop cultivation in general and plant protection in particular. Pesticide consumption has close relationship with pest and disease infestation. Within a close proximity pest infestation is relatively homogeneous in nature. To maintain this homogeneity in micro climatic condition the areas with close proximity were selected. The data were personally collected by the interviewer through a well-developed interview schedule. The data were collected during November 2018 to March 2019.

RESULTS AND DISCUSSION

Chemical pesticides buying behavioural profile of the market segments

Brand selection: Results related to brand selection behaviour of market segments are depicted in Table-1. Majority of 'Pg' (66.13%), 'Cg' (68.12%) and 'Bg' (72.60%) used to purchase pesticide from reputed company. It is quite evident from the study that the 'Bg' segment is more inclined to buy pesticide from a reputed company than the two other segments. There is no significant relationship between the three market segments in respect to purchasing pesticides from a reputed company. So, the null hypothesis is accepted.In respect of selecting brand according to the recommendation of the dealer, the three segments did not show any significant difference. The segments often selected brands according to the recommendation of the dealers. There is no significant relationship between the three market segments in respect to selecting brand according to the recommendation of the dealer. So, the null hypothesis is accepted. Again, the three segments often used to choose brand of pesticide by themselves and did

Table 1. Brand selection behavior of market segments

Sl no.	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg-Cg	Pg-Bg	Cg-Bg
1.	I like to purchase pesticide from a reputed company	Pg	41(66.13)	13(20.97)	6(9.68)	2(3.22)	62(100)	1.96	1.26	0.69
		Cg	47(68.12)	9(13.04)	12(17.39)	1(1.45)	69(100)			
		Bg	53(72.60)	10(13.69)	8(10.95)	2(2.73)	73(100)			
2.	I use to select brand in accordance with the recommendation of the dealer	Pg	11(17.74)	32(51.61)	16(25.80)	3(4.84)	62(100)	1.70	0.70	2.17
		Cg	9(13.04)	36(52.17)	17(24.63)	7(10.14)	69(100)			
		Bg	14(19.17)	41(56.16)	13(17.80)	5(6.85)	73(100)			
3.	I myself use to choose a brand	Pg	17(27.42)	25(40.32)	14(22.58)	6(9.68)	62(100)	2.60	0.36	3.72
		Cg	11(15.93)	33(47.83)	18(26.09)	7(10.14)	69(100)			
		Bg	21(28.76)	27(36.98)	19(26.02)	6(8.22)	73(100)			
4.	I stick to choose a brand for a number of years	Pg	13(20.96)	18(29.03)	19(30.64)	12(19.35)	62(100)	0.68	5.13	8.99**
		Cg	15(21.74)	21(30.43)	17(24.63)	16(23.18)	69(100)			
		Bg	21(28.76)	17(23.28)	29(39.72)	6(8.21)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

Table 2. Shopping behavior of market segments

Sl no.	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg - Cg	Pg - Bg	Cg – Bg
1.	I purchase pesticides from same dealer	Pg	9(14.51)	7(59.67)	11(17.74)	5(8.06)	62(100)	6.49*	6.48**	2.20
		Cg	17(24.63)	26(37.68)	19(27.53)	7(10.14)	69(100)			
		Bg	11(15.06)	29(39.72)	32(43.83)	1(1.36)	73(100)			
2.	I make trial on efficiency of the product	Pg	36(58.06)	17(27.41)	7(11.29)	2(3.22)	62(100)	2.32	0.24	2.50
		Cg	31(44.92)	25(36.23)	10(14.49)	3(4.34)	69(100)			
		Bg	41(56.16)	19(26.02)	11(15.06)	2(2.73)	73(100)			
3.	I purchase the right product whatever the distances I have to travel for the purpose	Pg	5(72.58)	13(20.96)	4(6.45)	0(0)	62(100)	1.61	0.68	1.70
		Cg	50(72.46)	11(15.94)	6(8.69)	2(2.90)	69(100)			
		Bg	49(67.12)	17(23.28)	7(9.59)	0(0)	73(100)			
4.	I use to go through the label before purchasing a pesticide	Pg	14(22.58)	31(50)	9(14.51)	8(12.90)	62(100)	4.57	3.21	2.19
		Cg	16(23.18)	33(47.82)	17(24.63)	3(4.34)	69(100)			
		Bg	11(15.06)	43(58.90)	14(19.17)	5(6.84)	73(100)			
5	Wherever the adjacent fields are attacked by pest I used to apply pesticides	Pg	21(33.87)	23(37.09)	3(20.96)	5(8.06)	62(100)	1.46	10.54***	10.97***
		Cg	17(24.63)	29(42.02)	19(27.53)	4(5.79)	69(100)			
		Bg	37(50.68)	21(28.76)	12(16.43)	3(4.10)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

Table 3. Preference to product, dealer, company characteristics of market segments

Sl. No	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg - Cg	Pg - Bg	Cg - Bg
1.	I consider pros and cons of applying a pesticide at the time of buying	Pg	27(43.54)	21(33.87)	11(17.74)	3(4.83)	62(100)	0.59	1.74	2.27
		Cg	31(44.92)	26(37.68)	8(11.59)	4(5.79)	69(100)			
		Bg	40(54.79)	19(26.02)	11(15.06)	3(4.10)	73(100)			
2.	I use to buy pesticide from a dealer who behaves well	Pg	36(58.06)	15(24.19)	9(14.51)	2(3.22)	62(100)	0.95	3.88	4.02
		Cg	39(56.52)	21(30.43)	8(11.59)	1(1.44)	69(100)			
		Bg	53(72.60)	14(19.17)	6(8.21)	0(0)	73(100)			
3.	I use to buy from a dealer who has adequate information about agriculture	Pg	24(38.70)	27(43.54)	10(16.12)	1(1.61)	62(100)	5.67*	8.59**	2.34
		Cg	32(46.37)	17(24.63)	18(26.08)	2(2.89)	69(100)			
		Bg	43(58.90)	15(20.54)	9(12.32)	6(8.21)	73(100)			
4.	I use to buy pesticides of big companies	Pg	23(37.09)	29(46.77)	6(9.67)	4(6.45)	62(100)	6.75*	4.79	12.80***
		Cg	16(23.18)	29(42.02)	13(18.84)	11(15.94)	69(100)			
		Bg	38(52.05)	21(28.76)	8(10.95)	6(8.21)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

Table 4. Cost consciousness of market segments

Sl no.	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg - Cg	Pg - Bg	Cg – Bg
1.	I use to buy the genuine product whatever the price may be	Pg	37(59.67)	19(30.64)	6(9.68)	0(0)	62(100)	3.03	1.03	7.57**
		Cg	31(44.92)	27(39.13)	9(13.04)	2(2.90)	69(100)			
		Bg	48(65.75)	21(28.76)	4(5.47)	0(0)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

Table 5. Preference to packaging of market segments

Sl no.	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg - Cg	Pg - Bg	Cg – Bg
1.	I use to buy the required amount of pesticides	Pg	28(45.16)	19(30.64)	11(17.74)	4(6.45)	62(100)	4.02	3.32	0.57
		Cg	41(59.42)	20(28.98)	5(7.24)	3(4.34)	69(100)			
		Bg	44(60.27)	18(24.65)	10(13.69)	1(1.36)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

Table 6. Credit orientation behavior of market segments

Sl no.	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg - Cg	Pg - Bg	Cg – Bg
1.	I buy pesticides as per the recommendation of the dealer if he allows me to buy on credit	Pg	7(11.29)	21(33.87)	29(46.77)	5(8.06)	62(100)	4.69	1.65	7.75*
		Cg	3(4.34)	18(26.08)	37(53.62)	11(15.94)	69(100)			
		Bg	13(17.80)	22(30.13)	30(41.09)	8(10.95)	73(100)			
2.	I use to buy on credit	Pg	5(8.06)	17(27.41)	32(51.61)	8(12.90)	62(100)	3.49	1.38	7.38*
		Cg	2(2.89)	13(18.84)	40(57.97)	14(20.28)	69(100)			
		Bg	10(13.69)	19(26.02)	33(45.20)	11(15.06)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

Table -7 Consultancy behavior of market segments

Sl no.	Statements	Market segments	Always	Often	Sometimes	Never	Total	Chi-square value		
								Pg - Cg	Pg - Bg	Cg – Bg
1.	I use to purchase pesticides on the basis of the dealer's recommendation	Pg	7(11.29)	21(33.87)	25(40.32)	9(14.51)	62(100)	3.28	1.70	5.60
		Cg	11(15.94)	19(27.53)	22(31.88)	17(24.63)	69(100)			
		Bg	6(8.22)	19(26.03)	36(49.31)	12(16.43)	73(100)			
2.	I use to purchase pesticides in accordance with the recommendation of experts	Pg	5(8.06)	21(33.87)	29(46.77)	7(11.29)	62(100)	12.06***	11.62***	7.15*
		Cg	11(15.94)	27(39.13)	14(20.28)	17(24.63)	69(100)			
		Bg	19(26.03)	16(21.92)	23(31.50)	15(20.54)	73(100)			
3.	I use to purchase pesticides according to the advice of progressive farmer	Pg	17(27.42)	23(37.09)	19(30.64)	3(4.84)	62(100)	1.01	3.11	1.65
		Cg	15(21.74)	24(34.78)	28(40.57)	2(2.89)	69(100)			
		Bg	11(15.06)	32(43.83)	25(34.24)	5(6.84)	73(100)			

(*= 10% level of significance **= 5% level of significance ***= 1% level of significance)

not have a significant difference between them. There is no significant relationship between the three market segments in respect to choosing brand yourself. So, the null hypothesis is accepted. Significant difference at 0.05 level was found between 'Cg' and 'Bg' in respect of purchasing same brand of pesticide for a number of years. The tendency of purchasing same brand of pesticide for years was found to be higher in 'Bg'. There is significant difference between the 'Cg' and 'Bg' regarding sticking to a particular brand of pesticide. So, the null hypothesis is rejected.

Shopping behavior: Table-2 reveals the results about the shopping behaviour of the respondents. Significant difference at 0.10 level between 'Pg' and 'Cg' and at 0.05 level between 'Pg' and 'Bg' was found in relation to purchase pesticide from the same dealer. No significant difference was found between the 'Cg' and 'Bg' in this regard. There is a significant difference between 'Pg' and 'Cg' and 'Pg' and 'Bg' regarding purchasing pesticides from same dealer. So, the null hypothesis is rejected. No significant difference was found in respect of making trial to prove efficacy of a product. Most of the respondents were inclined to verify the efficacy of the product through trial. There is no significant relationship between the three market segments in respect to making trial on efficacy of the product. So, the null hypothesis is accepted. The findings are in line of Basu, (1994).In case of traveling any distance to purchase the right product, majority of the three segments did not bother the distance. There was no significant difference between the segments in this aspect. There is no significant relationship between the three market segments in respect to making distant travels for the right product. So, the null hypothesis is accepted. Majority of the respondents of each segments either always or often go through the label before purchasing a pesticide. No significant difference was found between the segments in this regard. So, the null hypothesis is accepted. Regarding application of pesticides after observing the adjacent fields being affected by insects, significant difference at 0.01 level was found between 'Pg' and 'Cg' with 'Bg'. Applying pesticides when adjacent fields were infected was more common in 'Bg'. There is a significant difference between the market segments in respect to applying pesticides when adjacent fields are attacked by the pests. So, the null hypothesis is rejected.

Preference to product, dealer and company characteristics: The results related to product, dealer, company characteristics are revealed in table-3. In the matter of considering pros and cons of applying a pesticide at the time of buying, 'Bg' was more inclined to consider the pros and cons than the other two segments. 54.79% of 'Bg' always considers this aspect. But there was no significant difference between the segments in this aspect.So, the null hypothesis is accepted.In the aspect of buying pesticide from a dealer 'who behaves well', a vast number of 'Bg' (72.60%) stated that they always buy pesticide from a dealer who behaves well. 56.52% of 'Cg' and 58.06% of 'Pg' also stated that they buy pesticide from a dealer 'who behaves well'. From the result it can be concluded that good behavior from the part of the dealer attracts the respondents. There is no significant relationship between the three market segments in respect to purchasing pesticides from a well behaved dealer. So, the null hypothesis is accepted. The findings of this aspect of buying behaviour of the market segments contradicts with the findings of Basu, (1994).'Bg' mostly preferred to buy pesticide from a dealer who keeps 'adequate information about agriculture'. Most of the respondents from the other segments either always or often preferred to buy pesticide from a dealer with knowledge regarding agriculture. Significant difference at 0.10 level between 'Pg' and 'Cg' and at 0.05 level between 'Pg' and 'Bg' was found in this aspect. There is significant difference between the market segments in respect to purchasing pesticides from a dealer keeping adequate knowledge in agriculture. So, the null hypothesis is rejected.In relation to buying pesticide from big company, 52.05% of 'Bg' bought pesticides from big companies and a significant difference at 0.10 level was found between 'Pg' and 'Cg' and between 'Cg' and 'Bg' significant difference at 0.01 level was found. No significant difference between 'Pg' and 'Bg' was found regarding this point. There is a significant difference between the market segments regarding purchasing pesticides from big companies. So, the null hypothesis is rejected.

Cost consciousness of market segments: Cost consciousness behaviour of the market segments are discussed in table-4. 'Bg' (65.75%) and 'Pg' (59.67%) was seen to prefer buying genuine pesticide without thinking of the price all the time. 'Cg' and 'Bg' differed significantly (at 0.05 level) with respect to buy genuine pesticide without thinking about the price. There is a significant difference between 'Cg' and 'Bg' regarding buying genuine product without thinking about the price. So, the null hypothesis is rejected.

Preference to packaging: Preference to packaging of the market segments are depicted in table-5. In respect of buying required amount of pesticide, no significant difference was found between the market segments. All the three segments were mostly habituated of buying required amount of pesticides. So, the null hypothesis is accepted.

Credit orientation behaviour of market segments: Credit orientation behaviour of the market segments are discussed in table-6. 'Cg' and 'Bg' differed significantly (at 0.10 level) with each other in respect of following the dealer's recommendation under credit given by them. There was no significant difference between 'Pg' and 'Cg' and 'Pg' and 'Bg' in this aspect. The market segments were found to listen to the recommendation of the dealers sometimes, if credit was offered by the dealers to the respondents. There is a significant difference between 'Cg' and 'Bg' regarding using dealer recommended pesticides if credit is offered. So, the null hypothesis is rejected.Most of the respondents of the three segments stated that they used to buy pesticides sometimes on credit. Significant difference at 0.10 level was found between 'Cg' and 'Bg' regarding this issue. 'Cg' and 'Bg' did not differ significantly with 'Pg' in this regard. There is a significant difference between 'Cg' and 'Bg' regarding buying pesticides on credit. So, the null hypothesis is rejected.

Consultancy behaviour of the market segments: onsultancy behaviour of the market segments was discussed in table-7.No significant difference was found between the three market segments regarding this issue. The market segments were not quite interested in purchasing pesticides on the basis of dealer's recommendation. Most of them opined that they sometimes purchased pesticides on dealer's recommendation. So, the null hypothesis is accepted. In the aspect of buying pesticides on expert recommendation, significant difference between 'Pg' and 'Cg' at 0.01 level, between 'Pg' and 'Bg' at 0.01 level and between 'Cg' and 'Bg' at 0.10 level was found. So, the null hypothesis is rejected. There was no significant

difference between the respondents in relation to buy pesticides according to advice of progressive farmers. Most of the respondents from all three segments mentioned that from often to sometimes they buy pesticides according to the advice of the progressive farmers. So, the null hypothesis is accepted.

CONCLUSION

In respect of chemical pesticides brand selection, many vegetable growers purched the chemical pesticides from reputed companies, according to recommendation of dealer, by their personal choice a brand and used a brand for a long years, specially bringal growers and cauliflower growers used a brand for number of years, may be this brand of chemical pesticide (s) provided fruitful results to them. Many vegatable growers specially pointed gourd growers and bringal growers purchased chemical pesticides from same dealer. Few vegetable growers tested efficiency of the product. Vegatable growers showed their interest to purchase right & effective product for that even they were ready to travel long distance. Few vegatable growers read the chemical pesticides containers' lebel carefully whatever the things have written, before purchasing their required chemical pesticides. Under the grasp of fear, few of vegatable growers seeing the pest attack in adjacent fields, they applied chemical pesticides on their own field, though there was no incidence of insect-pests and diseases infestation and for that they purchased pesticides.A certain percent of vegatable growers tried to know the detail information about application of the chemical pesticides at the time of purchasing. Most beautiful thing of any human being is his behaviour. It also reflected on vegatable growers, they preferred to go to purchase chemical pesticides from the dealer who's behaviour was good.

A certain percent of vegatable growers preferred to purchase chemical pesticides from those dealer who had adequate knowedge about agriculture. Many vegatable growers preferred to buy chemical pesticides of big companies, because those companies are established and well-known companies and the companies do not want to harm their reputaion by adulteration, these products are most trustworthy to vegatable growers. Many vegetable growers were so much interested to buy genuine products whatever the price may be, they were ready to pay. Because effective chemical pesticides effectively control insect-pests and diseases. Nearly half of the respondents (vegatable growers) reported that to get required amount of chemical pesticides from pesticides shop, was not a problem.Only a few percent of population (respondents) reported that they bought chemical pesticides as per the recommendation of the dealer, if that dealer allowed them to buy chemical pesticides on credit. Some of respondents replied that they purchased the chemical pesticides when they got the products in credit. Some of vegetable growers reported that they purchased pesticides on the basis of the dealers recommendation. Some of vegetable growers did that on the basis of recommendation of experts. Again some of vegetable growers expressed their opinion that they generally depended on the advice of progressive farmers in purchasing chemical pesticides. Plant protection aspect is a most complex aspect of cultivation process in respect of brand selection, shopping behaviour, preference to product, dealer and company characteristics, cost consciousness, getting required amount of chemical pesticides, credit orientation, consultancy behaviour etc.

To grow vegetable crops properly proper buying behaviour of vegetable growers is also necessary. Proper behaviour are the followings:-

Brand selection:

- Purchasing pesticides from a reputed company, a good behaviour.
- According to the recommendation of dealer to purchase pesticides or select a brand is not a good behaviour always. Because, may dealers biased by their business profit motive. Hence, farmers must develop their own knowledge about various pesticides brands. In this respect various short-term training, read the leaflet, folder, pamphlet etc. provided by dealers or companies or at the time of training very carefully learn that, search this pesticides brand in mobile, or go to progressive farmers who know the matter in details etc.
- To choose a pesticide brand yourself means farmers themselves, good knowledge about various brands of chemical pesticides is needed. If farmers are educated it's a child play, otherwise a difficult task.
- Sticking to a particular brand of pesticide is not a good behaviour always. If the pesticides provide better result, it is all right, otherwise change the pesticide, nowadays many effective pesticides are coming in markets.

Shopping behaviour

- Purchasing pesticides from same dealer is not a good behavior, if all pesticides available from there or purchased pesticides are effective, then it is alright, otherwise go to other dealers shop to purchase pesticides.
- To trial any pesticide first time is a good behaviour.
- Covering long distance for a right product is a good behaviour.
- Go through the label before purchasing a pesticide is a very good behaviour.
- Farmer's field having no incidence of insect-pest & disease infestation, but surrounding field of other farmers had it. Vegetable growers assuming the pest infestation on their field applied chemical pesticide. It was not a good behaviour. Because, it pollutes the environment instead affects on pests. Hence, proper educational training is needed to change this type of behaviour of vegetable growers. Pesticides will be applied when pest attack is there on field and crossed the economic threshold level (ETL).

Preference to product, dealer, company characteristics of market segment

Many of vegetable growers considered pros and cons of applying a pesticide at the time of buying. It was a good behaviour of vegetable growers. A certain percent of vegetable growers told that they purchased chemical pesticides from a dealer who behaves well, Good behaviour of anybody is everybody's natural expectation. Some of respondents reported that they purchased pesticides from those dealers who having adequate information about agriculture. It indicates that training also to be given to dealers/agricultural input reailers to enhance their knowledge on agriculture and allied aspects. Few of respondents preferred to purchase chemical pesticides of big

companies. Because big companies as reputed companies and their products are quality product and reliable.

Cost consciousness of market segments

- Vegetable growers behaviour to by the genuine product whatever the price may be was a good behaviour. Government authority must check the quality of products and obviously it will facilitate the vegetable growers.
- To get required amount of chemical pesticides respondents had not any problem.

Credit orientation behaviour of market segments

- Buying pesticides as per the recommendation of the dealer, if he allows me to buy on credit, is not a good behaviour,because, by this activity dealer may sell their outdated, damaged products to vegetable growers, ultimately farmers will not get any result. Hence, farmers should try to purchase products in cash.
- Few of farmers preferred to purchase products in credit, means farmers purchasing power was low, hence income enhancement of farmers is very urgent by crop diversification, farming diversification, cultivation of short duration crop, cultivation of high value crop etc.

Consultancy behaviour of market segments

- Vegetable growers purchase of pesticides on the basis of the dealer's recommendation, is not always a good behaviour. Sometimes dealers misuse your choice, basically they are businessmen, and other cause is that all the dealers are not possessing sound knowledge on pesticides and crop cultivation. Hence, training should be given to dealers on this aspects.
- Vegetable growers purchased chemical pesticides in accordance with the recommendation of experts, was a good behaviour, but always depends on expert is not a good behaviour. Farmers should develop their knoledge day by day.In this respect, various short term training should be provided to farmers by the efforts of government mainly.
- Vegetable growers purchased pesticides accoding to the advice of progressive farmers, is a not a good behaviour always. For a certain period, it is right but not for always. Farmers should develop their personal knowledge level to carry out his /their cultivation activities smoothly. In this regard, they can attend various training programmes on agriculture especially on plant protection.

"Organic agriculture is more about fairness and respect than it is about parts-per-billion of pesticide residues."---Jim Hightower

REFERENCES

Basu, D. (1994) Farmer's Decision Making Process in Purchasing Pesticides. Ph.D. Thesis (unpublished), Department of Agricultural Extension, BCKV, Nadia.

Muthuraman P, Kumar SA (2013) Crop growth stagewise IPM practices in rice. Kisan World.;40(4):57.

Sardana H.R. (2001) Integrated pest management in vegetables. Training manual-2, Training on IPM for Zonal Agricultural Research Stations. 2001 May 21:105.

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