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Study on consumer's preference towards insecticide (Confidor) on chili crop in Prayagraj district of Uttar Pradesh

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Abstract
The present study is concerned with promotional strategies of BAYER CROP SCIENCE and consumer's preferences to purchase insecticide product Confidor in Prayagraj district of Uttar Pradesh. The socioeconomic profile of the Chilli growers and major constraints in buying insecticides and the research-based solution comes under the purview of this study. The main focus is on the promotional strategies used by the Bayer company in the area of promotion and distribution of Confidor. In a layman language the term strategy is a term related to 'warfare or a plan to win a war". But in the business world it refers to plans relating to marketing. It deals with the adjustment of controllable factors, *viz*, production, physical distribution, promotion and pricing within the environment of uncontrollable factors, *viz*. competition, legal barriers. Failure or survival of a product depends upon the effectiveness of strategic planning. For e.g., to increase the prices of a product to a significant extent the management will have to explore and evaluate the competitors towards the change in price. Also, the change in price can lead to a positive and negative impact towards the demand and buying behavior of the consumers according to the positive or negative change in the price. Factors like quality, efficiency, effectiveness and also value for money are the criteria seen in the buying of insecticide by Chilli growers during the study. While purchasing the insecticide product most of the farmers gave their preference to effectiveness of the product, followed by the price. Crop science should try to popularize their products through promotions and advertisements and should manufacture better products for their customers with reasonable price.

Keywords: Confidor, insecticide, chili crop

Introduction
The chilli is the fruit of plants belonging to the nightshade family, Solanaceae, and belonging to the genus Capsicum. Chilli peppers are commonly used as a seasoning to add heat to dishes in many cultures. Capsaicin and related compounds are known as capsaicinoids are the compounds that give chilli peppers their heat when consumed or applied topically. The botanical name of chilli is referred to as Capsicum frutescens. Mexico is the origin of chilli. Many cultivars of chilli pepper spread throughout the world after the Columbian Exchange, and they are now used for both food and traditional medicine. Chilli is a spicy fruit used in cuisine preparations. It is mostly added as an ingredient in foods to make it spicy. As per the latest data, India tops the list in chilli production followed by China, Peru, Spain and Mexico. Indian chillies are known for their pungency and color, especially the ones grown in Guntur district of Andhra Pradesh. Some of the chillies that are bigger in size are called bell peppers and are used as a vegetable. Chilli has various local names in India like lanka, mirchi etc. Indian chillies are known for their pungency and color, especially the ones grown in Guntur district of Andhra Pradesh. Some of the chillies that are bigger in size are called bell peppers and are used as a vegetable. Chilli has various local names in India like lanka, mirchi etc. It is known as the most valuable crop of India. It is used as a principle ingredient of various curries and chutneys, also used in vegetables, spices, condiments, sauces and pickles. Pungency in chillies is due to the active constituent "Capsaicin", an alkaloid. The native home of chilli is considered to be Mexico with secondary origin of Guatemala. Chilli was introduced in India by the Portuguese in Goa in the middle of 17th century and since then it had rapidly spread throughout the country. Capsaicin has many medicinal properties, especially as an anti-cancerous agent and instant pain reliever. It also prevents heart diseases by dilating blood vessels.

The fruit is actually called "chilli" and is used as a spice in a variety of cuisines all over the world in different forms as green chillies, dried red chillies as a whole or in the form of powder. Basically, chillies contain capsaicin, which gives a strong burning tangy sensation when eaten and the red colour is because of the presence of pigment capsanthin. Generally, chillies are valued based on their high pungency and colour. Production of chilli is very high in Asian countries due to high consumption. Commercial cultivation of chilli is very much successful, and one can expect decent profits in chilli farming due to its market value in local areas and international markets (export market). Most of the people think that chilli is native to India, but it is originated from 'South America" and these were brought to Asia by Portuguese at the end of 15th century. India is the largest producer, consumer, and exporter of chilli. Chillies can be grown in open fields, greenhouses, polyhouses, under shade nets, pots, containers, even in back yards. The quality and production would be high if they are grown in controlled environment such as greenhouses. Chillies can also be grown successfully in hydroponic system.

Review of Literature
Kanwaljit *et al*. (2010) surveyed 150 vegetable growers to know the use of insecticides and indigenous practices on cabbage crop of Ludhiana district (Punjab). They noticed that about 75 per cent of vegetable growers used non-recommended insecticides in their areas to tackle aphid and DBM damage. It was found that only 22 and 27percentage of the area was treated with insecticides at recommended doses to control DBM and aphid, respectively.

Pratik Modi (2012) rural space, markets and consumers are a lot more heterogeneous than their urban counterparts. At the same time, in emerging countries, 'rural' is also vulnerable, disadvantaged, marginalized, poor, and ignored. In this sense, 'rural' is a metaphor representing the poor, disadvantaged and marginalized. Should marketing activities in rural space be any different than in the urban space? There is a great deal of knowledge deficit when it comes to the marketing activities involving 'rural' either as a consumer or producer. Much of the existing marketing scholarship has focused on marketing of consumer goods to the rural or urban poor in emerging countries. This sometimes also gets referred to as Bottom of Pyramid (BoP) marketing.

Chandi *et al*. (2012) [2] studied on insecticide use pattern on cole crops against Diamondback moth in Punjab. They revealed that a wide range of insecticides were used either singly or in mixture, eighteen insecticides singly and four mixtures were being used extensively by the farmers. They also stated that on an average, 4.9 sprays (range 3 11 sprays) were done by each cabbage/cauliflower growers Out of these, 12.2 per cent sprays were done with recommended (by Punjab Agricultural University, Ludhiana) insecticides, 71.9 per cent with non-recommended insecticides and 15.8 per cent with non-recommended mixtures.

Siddartha (2013) [4] conducted a survey to obtain comprehensive information on pest management practices and pesticides used by cabbage growing farmers in and around Chikmagalur. 10 villages were selected and in each village ten cabbage growing farmers were sampled to obtain information. Analysis of survey data suggested that farmers were using 16 insecticides, 7 fungicides and 3 plant growth regulators on cabbage crop. On an average, farmers sprayed these chemicals eight times during cropping period.

Odhiambo *et al*. (2014) studied Insecticide use pattern and residue levels in cabbage (Brassica oleracea var. capitata L.) within selected farms in Southern Ghana through questionnaire. This study revealed that among surveyed farmers 32.39 per cent were using Rimon, 19.72 percent using Regent, 9.86 using Dursban, 7.04 percent using Dize DDVP, 5.63 per cent using Cyperdim super, 4.23 per cent using Dipel, 2.83 using Pawa, 2.83 per cent using Amektin and emaining 12.68 per cent was using other chemicals or mixture of two chemicals to control pests in cabbage field. Among them 46 per cent farmers taking spray weekly, 37 per cent farmers spraying once in 2-3 weeks. 10 per cent farmers spraying once in 3-4 weeks remaining 7 percent farmers were spraying as per manufacturer's recommendation.

Jiang *et al*. (2015) established LC50 value for susceptible diamondback moth for eight insecticides of various classes. They found that abamectin, chlorantraniliprole, spinosad, beta-cypermethrin, chlorfenapyr, diafenthiuron, chlorfluauron and Btk showed LC50 values of 0.02, 0.23, 0.12, 3.55, 0.41, 22.11, 0.33 and 0.26 respectively.

Machekano *et al*. (2017) reviewed on farmers' behavior and insecticide use against Diamondback moth in South Africa. They reported that 75 to 100 per cent of farmers in South Africa totally rely on chemical insecticides. They also reported that by global standards, these farmers use the greatest variety of chemicals, highest application rates, and the highest application frequency it ranges from once every three weeks to three times a week.

Materials and Methods
Selection of District:
Prayagraj district of Uttar Pradesh was purposively selected to study the marketing channel and buying behavior of farmers towards insecticide, as the district occupies a pride of place in consumption of insecticide, area and production of major crop like paddy and chilli in the state of Uttar Pradesh.

Selection of Block
There were 23 Blocks in district. Soraon block was selected purposively for the study. Because this block occupies prestigious place in Chilli cultivation in which mainly Confidor Insecticide is used, Soraon block is situated in north-east direction part of Prayagraj district. Soraon block is situated 30 km away from the KVK Prayagraj. The agro-climatic condition of the block is suitable for the Chilli cultivation. The farmers of this block have been growing Chilli for several years.

Selection of village
Soraon block contains 113 villages. The 5% villages were selected according to the need of study purposively.

1	Sersa
2	Abdalpur
3	Padaraiya
4	Rajapurmalhua
5	Soraon
6	Shivgarh

Selection of Respondents
From the selected village list of all the Chilli cultivators obtained from the village development office in each selected village. For the selection of cultivators from families were listed and about 10% farmers were randomly selected from each village and then farmers were classified into five groups.

Types of Farmers

Category	Respondents	Land Holdings
1. Size group - I	Marginal Farmers	0 to 1 Hectare
2. Size group – II	Small farmers	1 to 2 Hectare
3. Size group – III	Semi medium Farmers	2 to 4 Hectare
4. Size group – IV	Medium Farmers	4 to 10 Hectare
5. Size group - V	Large Farmers	Above 10 Hectare

Analytical Tools

To full fill the specific objectives of the study, based on the nature and extent of data, the following analytical tools and techniques will be adopted.

Standard Deviation- $\sigma = \sqrt{\dfrac{\sum(x_i - \mu)^2}{N}}$

Result and Discussion

To study the socio-economics profile of respondents in study area

Socioeconomic Condition of Respondents

Size of the farms group in number of marginal, small, semi medium, medium and large size farms were 45,23, 17, 15 and 0 farms group respectively. Altogether 100 farms groups selected for study.

Number of respondents = 100 M S SM M L = 45+23+17+15+0

Table 1: Cultivated holdings of the farms group

Sr. No.	Particulars	Size of Farms Group					Average Sample
		Marginal	Small	Semi Medium	Medium	Large	
1.	Size of farms group (In numbers)	45	23	17	15	0	20 (100%)
2.	Average size of cultivated land Holdings in hectare	0.6	1.5	2.5	5.4	0	2
3.	Average Land utilization in different (crops sown area in ha)						
I.	Kharif						
	Chilli	0.26	1.35	2.1	3.5	0	1.4
	Paddy	0.49	1.6	1.4	3.5	0	1.3
	Bitter Gourd	0.65	0.15	0.25	0.35	0	0.28
	Total						2.98
II	Rabi						
	Wheat	0.19	1.29	2.58	3.63	0	1.5
	Gram	0.18	0.25	0.48	0.55	0	0.28
	Mustard	0.10	0.15	0.36	0.46	0	0.21
	Total						1.99
III	Zaid (Summer)						
	Cucumber	0.9	0.13	0.27	0.38	0	0.34
	Other Vegetables	0.5	0.11	0.25	0.30	0	0.23
	Total						0.57

Detail description of sample size of households/families in different size of farms group

Number of respondents = 100 M S SM M L = 45+23+17+15+0

Table 2: Sample size of households/families in different size of farms group

Sr. No.	Particulars	Size of Farms Group					Average Sample
		Marginal	Small	Semi Medium	Medium	Large	
1.	Average Size of the Families	4.85 (100.00)	5.90 (100.00)	6.40 (100.00)	6.68 (100.00)	0	4.76 (100.00)
	Male	2.9 (59.80)	3.35 (56.78)	3.45 (53.91)	3.48 (52.09)	0	2.63 (55.25)
	Female	1.95 (40.20)	2.55 (43.22)	2.95 (46.09)	3.2 (47.91)	0	2.13 (44.75)
2.	Age Composition						
I	Below 15 years	1.35 (27.83)	2.15 (36.45)	1.92 (30)	2.20 (32.93)	0	1.52 (31.93)
II	15 to 59 years	3.10 (63.92)	2.85 (48.30)	3.98 (62.19)	4.08 (61.09)	0	2.80 (58.82)
III	60 years and above	0.40 (8.25)	0.90 (15.25)	0.50 (7.81)	0.40 (5.98)	0	0.44 (9.25)

Detail description of literacy in different size of farms

Number of respondents = 100 M S SM M L = 45+23+17+15+0

Table 3: literacy in different size of farms

Sr. No.	Particulars	Size of Farms Group					Average sample
		Marginal	Small	Semi Medium	Medium	Large	
	Average size of farms Families	4.85 (100.00)	5.90 (100.00)	6.40 (100.00)	6.68 (100.00)	0	4.76 (100.00)
	Education status						
I	Primary	0.5 (10.30)	0.50 (8.47)	0.80 (12.50)	0.75 (11.22)	0	0.51 (10.71)
II	Middle/High School	0.40 (8.22)	0.45 (7.63)	0.89 (13.91)	0.70 (10.48)	0	0.49 (10.29)
III	Intermediate	1.98 (40.82)	2.05 (34.75)	2.15 (33.59)	2.40 (35.93)	0	1.71 (35.92)
IV	Graduation and above	0.75 (15.46)	1.05 (17.80)	1.11 (17.34)	1.25 (18.71)	0	0.83 (17.44)
3.	Total Literacy	3.63 (74.85)	4.05 (68.64)	4.95 (77.34)	5.10 (76.35)	0	3.54 (74.37)
4.	Illiteracy	1.22 (25.15)	1.85 (31.36)	1.45 (22.66)	1.58 (23.65)	0	1.22 (25.63)

Detail description of occupational distribution in different size of farm groups

Number of respondents = 100 M S SM M L = 45+23+17+15+0

Table 4: Occupational distribution in different size of farm groups

S. No.	Particulars	Size of Farms Group					Average Sample
		Marginal	Small	Semi Medium	Medium	Large	
1.	Size of farms group (In numbers)	45 (100.00)	23 (100.00)	17 (100.00)	15 (100.00)	0	20 (100.00)
2.	One occupation (Primary Occupation)	20 (44.44)	11 (47.83)	9 (52.94)	6 (40)	0	9.2 (46)
3.	Two occupations (Secondary Occupation)	15 (33.33)	9 (39.13)	5 (29.41)	4 (26.67)	0	6.6 (33)
4.	Three occupations (Tertiary Occupation)	10 (22.22)	3 (13.04)	3 (17.65)	5 (33.33)	0	4.2 (21)

Details description Asset position in different size of farms group

Number of respondents = 100 M S SM M L = 45+23+17+15+0

Sr. No	Particulars	Size of Farms Group					Average Sample
		Marginal	Small	Semi Medium	Medium	Large	
1	Land	38,560.00	47,700.00	50,350.00	73,600.00	0	42,042.00 (28.77)
2	Farm buildings	28,200.00	35,650.00	52,000.00	65,300.00	0	36,230.00 (24.80)
3	Value of farm machinery & equipment's	27,100.00	33,450.00	65,300.00	72,500.00	0	39,670.00 (27.15)
4	Livestock	15,260.00	25,890.00	48,900.00	50,730.00	0	28,156.00 (19.28)
	Total Value	1,09,120.00 (100.00)	1,42,690.00 (100.00)	2,16,550.00 (100.00)	2,62,130.00 (100.00)	0	1,46,098.00 (100)

To workout different Marketing Channel of insecticide (CONFIDOR) in Prayagraj district, Uttar Pradesh.
Marketing Channel of Bayer Crop science - Every Company has to figure out a go-to-market strategy, in simpler times, the company would hire sales people to sell to distributors, wholesalers, retailers, or directly to final users. Today the number of go-to-market alternatives has exploded to eliminate the middleman and make the product readily and cheaply consumers/ farmers.
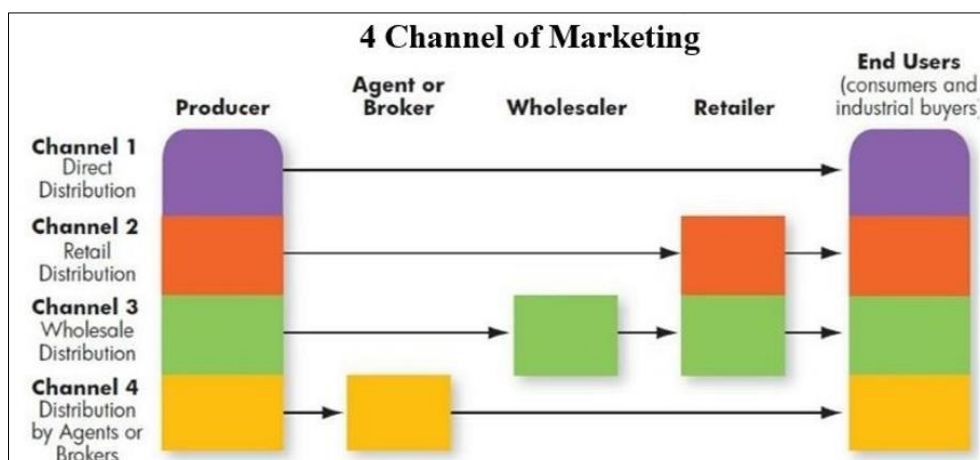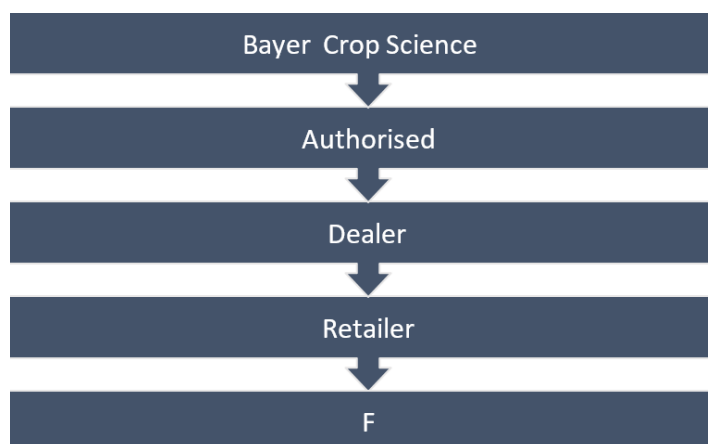

Fig 1: Channel of Marketing

The most common marketing channel engaged in the marketing of Confidor insecticide in Prayagraj dist. are flowing.

Objective 1: To assess the consumer's preferences to purchase insecticide in study area.

Evaluation of the consumer's preferences of the respondents with respect to the purchasing insecticide.

Table 5: Factors considered by respondents while purchasing insecticide

Parameter		Strongly disagree (1)	Disagree (2)	Moderate (3)	Agree (4)	Strongly agree (5)	Cumulative score	Rank
Product	Quality	0(0)	8(16)	20(60)	30(120)	42(210)	406	1
Product	Brand images	4(4)	7(14)	42(126)	34(136)	13(65)	345	6
Product	Packaging	5(5)	9(18)	43(129)	18(72)	25(125)	349	5
Price	Cost effective	5(7)	22(44)	20(60)	18(72)	35(175)	358	4
Price	Discount	18(23)	22(44)	21(63)	26(104)	13(65)	299	9
Place	Availability	4(5)	18(36)	43(129)	20(80)	15(75)	325	7
Place	Relation with retailers	10(12)	5(10)	54(162)	21(84)	10(50)	318	8
Promotion	Promotional Strategies	0(0)	3(6)	36(108)	34(136)	27(135)	385	2
Promotion	Source of information	6(8)	12(24)	22(66)	26(104)	34(170)	372	3

Max Rating (max scale X 100 respondents) =5X100=500(max.)

The level of satisfaction of farmers towards Confidor insecticide is calculated on the basis of price and quality
Level of satisfaction of farmers towards Confidor insecticide on the basis of Price:

Table 6: Level of satisfaction of respondents towards basis of Quality

Level of Satisfaction	No. of Respondents	Percentage
Good	70	70
Average	20	20
Poor	10	10
Total	100	100
Level of Satisfaction	**No. of Respondents**	**Percentage**
Good	77	77
Average	13	13
Poor	10	10
Total	100	100

Objective 2: To identify the major constraints of marketing of insecticide in study area and to suggest suitable measures.

Major constraints of marketing of insecticide

Total no. of market functionaries = 10 Dealers + Retailers = 2+8 =10

Table 7: Major constraints in marketing of insecticide

Sr. No.	Constraints	No. of Market functionaries	Percentage	Rank
1.	Lack of awareness	5	50	4
2.	Lake of knowledg	4	40	5
3.	Demo product	6	60	3
4.	Price of product	8	80	1
5.	Availability of product	5	50	4
6.	Availability of duplicate products	2	20	7
7.	Difference between local and MNC Company's product price	7	70	2
8.	Less numbers of salespersons	6	60	3
9.	Inadequate trained personal for marketing	3	30	6

Conclusion

In current scenario and future Insecticides have bright future because every year the consumption of insecticides is increasing day by day. Farmers depend on the insecticides that show the increasing demand of the insecticides. Farmers not waste time on the field they want easy solutions for any problem of field therefore they uses insecticides efficiently. Due to the use of insecticides and PGR farmers yield more crops so they not stop to use the insecticides & PGR. Insecticides less time taken, quick action on the target organisms. Maximum farmers use the excess quantity of the insecticides but some farmers say that excess use of insecticides is harmful for the field and they use the insecticides only when it was very essential for the crop. According to farmers without insecticides in this time crop growing in effective manner is not possible because in every stage of the plant's different type of soil, leaf and stem are attacked, so insecticides are important for farming purpose. Every farmer wants high yield from a low investment, for the high yield they uses the PGR's. PGR provides the all micro nutrients to the plant and also regulates the growth of the respective plant.

Prayagraj is one of the top districts in Chilli production. And the Chilli growers uses the agrochemicals of different companies like Syngenta, Bayer, Pi, UPL, Dhanuka etc. Overall, Bayer performance is good but it needs to carry out more effective promotional activities in Prayagraj district. Bayer is having a good opportunity to capture more market in district by increasing its promotional activity and focusing on new products. Bayer enjoys good brand image and has got reputation for service in the region. It needs to capitalize on these strengths by effective promotion for increased market share and sales.

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