

MARKET ANALYSIS OF PESTICIDES FOR PADDY CROP

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ABSTRACT

Judicious use of quality pesticides helps to reduce the crop losses, provide economic benefits to farmer and help in ensuring food safety and security for the nation. Production in the Indian pesticide industry has remained stable at 82,000 -85,000 MT in FY 012-13. The Indian pesticides industry is dominated by insecticides, whereas globally herbicides and fungicides are the key segments. This research has been done under sponsorship of Excel Crop Care Limited in paddy crop of *Kelwara* Region of *Baran* District of Rajasthan. Main purpose of the research was to develop market for Excel Crop Care products in paddy crop. A descriptive research design developed, judgmental sampling for villages (15) selection and convenience sampling was used for farmer (150) and dealers (7) selection. Study concluded that UPL, Excel, and PI are major players for paddy crop in study area. Total market size is 306 lakh (Fungicides – 147 lakh, Insecticides – 90 lakh and Herbicides – 90 lakh). Market sizes of Excel crop care is about 21.57 per cent. Field problem occurrence in the study area (on the basis of farmers) - 54 per cent by fungus followed by 30 per cent insects and 16 per cent weeds. Company name, quality, application method of product and dealers recommendations are most preferred factors of farmers' preference for brand selection, what are the parameters they consider during buying any pesticide. Demonstrations, farmer's meeting, and individual contacts are most preferred promotional activities. Margin is most important for dealers and unexpected rewards are least. UPL is leading player in term of promotional activities while Excel crop care Ltd. is third according to dealer's opinion. Further we can explore the analysis of gap of demand and supply of pesticide in the study area for paddy crop.

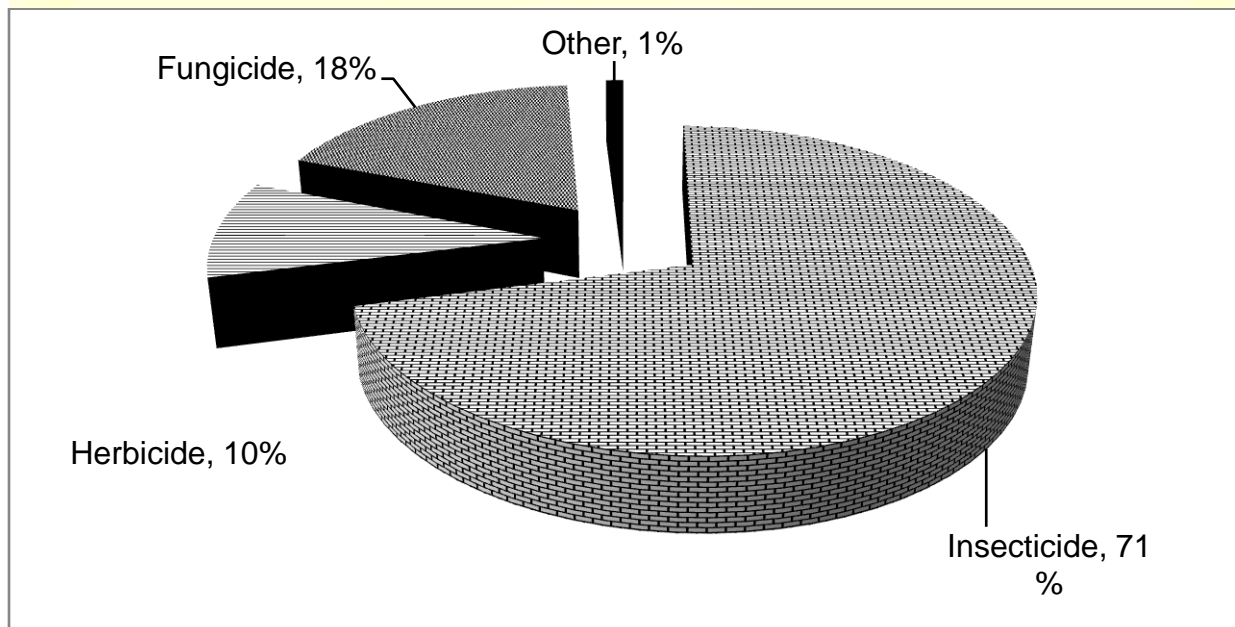
Keywords: Brand selection, Indian pesticide industry, Margin, Market size, Promotion, Ranking, Weighted average

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1. Introduction of Pesticide Industry

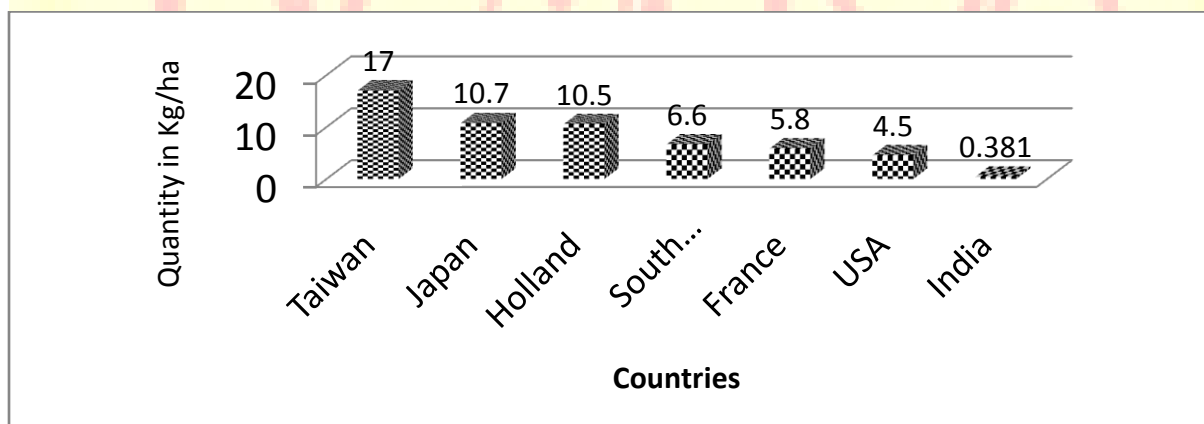
Agriculture is the backbone of the Indian economy whose prime motto is to provide food security to the mammoth population of country. Ensuring food security for more than 1bn Indian population with diminishing cultivable land resource is a herculean task. This necessitates use of high yielding variety of seeds, balance use of fertilizers, judicious use of quality pesticides along with education to farmers and the use of modern farming techniques. It is estimated that India approximately loses 18 per cent of crop yield valued at ` 900 billion due to pest attack each year.

Figure 1 Break-up of Agrochemical Industry (Market size – ` 79 billion)



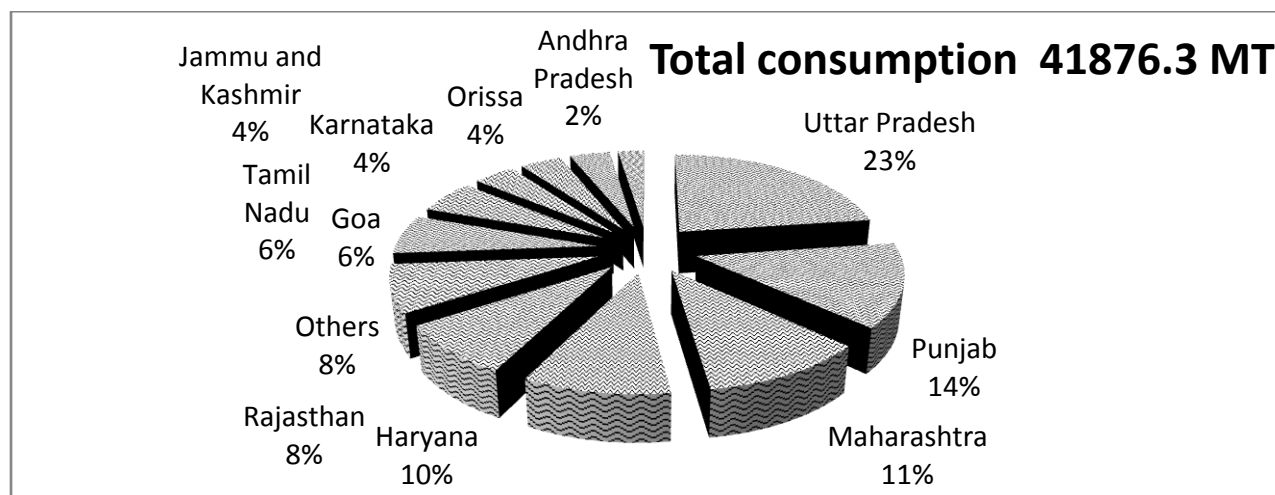
Source: Intecos – [www.intecos.com/data-mining- Industrial data book 2013](http://www.intecos.com/data-mining-Industrial%20data%20book%202013)

Figure 2. Global Pesticide Consumption



Source: www.indiastat.com

Figure3. State Wise Pesticides Use in India



Sources-Indiastat.com

Table 1. Most consumed pesticides in the country (during 2005-06 to 2012-13)

S. No.	Pesticide (Technical Grade)	Consumed (metric tonnes)
1	Sulfer(fungicides)	16424
2	Mancozeb(fungicides)	11067
3	Cypermatheirn(insecticides)	07309
4	Monocrotophos(insecticides)	08309
5	Butachlor(herbicides)	07650
6	Quinalophos(insecticides)	06368
7	Phorate(insecticides)	10767

Source- <http://www.indiaforsafefood.in/farminginindia.html>

2. Introduction to the Research

- Crop: Paddy (Sown area in current season = 1500 ha)
- Area: Kelwara Region of Baran District of Rajasthan
- Project Sponsor: Excel Crop Care Limited
- Sector: Pesticide

2.1 Purpose of the research-To develop market for Excel Crop Care products in paddy crop

2.2 Limitation of study- Herbicides are not considered because Excel Crop Care Limited does not have any technical herbicide for paddy crop.

2.3 Map of Study area



2.4 Objectives

1. Market size of pesticides and market share of Excel Crop Care products
2. Farmers' opinion about pesticides use for paddy crop
3. Dealers' opinion about pesticide sector

3. Research Methodology

3.1 Research design-Descriptive

3.2 Research Instrument-Pre structured Questionnaire

3.3 Sample Unit- Farmers, Dealers

3.4 Sampling Technique- Judgmental sampling: village are selected on basis of Tertiary Manager and field staff judgment.

Convenience sampling- Farmer and dealers are selected.

3.5 Source of Data- Primary data-is collected by conducting field survey of two categories of respondents Farmers, Dealers. Secondary data- regarding cultural practices, pesticides industry, etc. obtained from Excel crop care office Jaipur

3.6 Sample size

Farmers	150
Dealers	7

4. Findings and Analysis

The results of the study are presented and discussed in this chapter under following sub heads:

4.1 Market size of pesticides and market share of Excel Crop Care products

Table 2 Shows pesticides of different companies for paddy crop in study area with recommended dose. UPL, Excel, and PI are major players.

Table 2. Pesticides of different companies for paddy crop in study area

S. No.	Category	Company Name	Trade Name	Dose
1.	Fungicides	UPL	Saaf	1 lt/bigha
			Uthan 45	1 lt/bigha
		Excel	Hexzol	1lt/bigha
		PI industry	Kitazen	1.5lt/bigha
2.	Insecticides	Excel	Tricel	500ml/bigha
			Imidacel	1lt/bigha
			celcron	1lt/ bigha
		UPL	Lancer gold	2kg/bigha
		PI Industry	Kareena	1lt/bigha
		BAYER Crop Science	Regant	1kg/bigha

Source: Researcher's computation from dealers

Table 3 shows total market size is 306 lakh (Fungicides – 147 lakh, Insecticides – 90 lakh and Herbicides – 90 lakh). Market sizes of Excel crop care is about 21.57 per cent.

Table 3. Market size of pesticides and share of Excel Crop Care Ltd.

S. No.	Pesticide Category	Market Size (` Lakh)	Market Share of Ecc(` Lakh)
1.	Fungicides	147	14 (9.52 %)
2.	Insecticides	90	52 (57 %)
3.	Herbicides	69	00 (00 %)
	Total	306	66 (21.57 %)

Source: Researcher's computation from dealers

4.2 Farmers' opinion about pesticides use for paddy crop (Farmers' profile)

In study area more farmer under the Early Middle and late Middle. The early and late middle farmers are more adopter of new technology.

Table 4. Distribution of Age group

S. No.	Age			
	Category	Frequency	Percent	Cumulative %
1	18-30 years - Early Young	4	2.7	2.7
2.	>30-40 years - Late Young	32	21.3	24.0
3.	>40-50 years - Early Middle	53	35.3	59.3
4.	>50-60 years -Late Middle	46	30.7	90.0
	>60 years - Old	15	10.0	100.0
	Total	150	100.0	

Source: Researcher's computation from field data

In study area more farmer Education level is high in Matric 41.3%, Illiterate 25.3%

Table 5. Distribution of Education group

S. No.	Education			
	Category	Frequency	Percent	Cumulative %
1.	Illiterate	38	25.3	25.3
2.	Matric	62	41.3	66.7
3.	SSC	27	18.0	84.7
4.	Graduate/PG	23	15.3	100.0
	Total	150	100.0	

Source: Researcher's computation from field data

Table 6 shows there is no farmer in marginal and large category in study area. But Farmers are under the semi medium and medium 95%, in these category farmers are spending money very carefully in pest control.

Table6. Distribution of Land Holding Group

S. No.	Land Holding			
		Frequency	Percent	Cumulative %
1.	Small, >1-2 ha	7	4.7	4.7
2.	Semi medium, >2-4 ha	76	50.7	55.3
3.	Medium, >4-10 ha	67	44.7	100.0
	Total	150	100.0	

Source: Researcher's computation from field data

Fig. 4 Identification of Field problems occurred in paddy crop

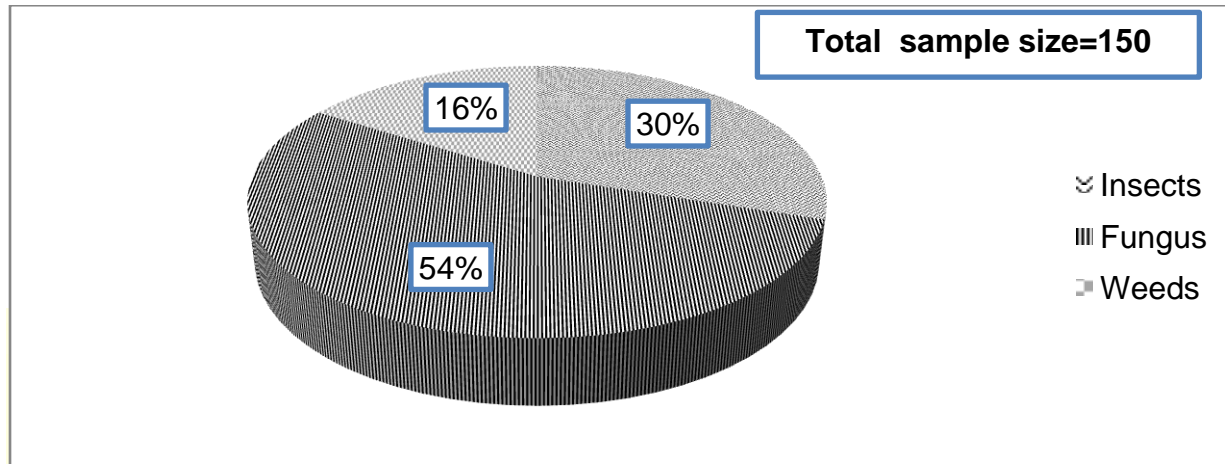


Fig. 4 shows field problem occurrence in the study area on the basis of farmers, 54 per cent by fungus followed by 30 per cent insects and 16 per cent weeds.

Table 7 presents ranking given by farmers to the major fungicides brands in study area.

“Statistically significant”

Table7. Fungicides brands ranked by farmers

S. No.	One-Sample Statistics		One-Sample Test		Rank
	N	Mean	df	Sig. (2-tailed)	
Company					
UPL	150	1.6867	149	.000	1
BASF	150	2.3267	149	.000	2
INDOFIL	150	3.0800	149	.000	3
EXCEL	150	3.5467	149	.000	4
OTHERS	150	4.3467	149	.000	5

Source: Researcher’s computation from field data

Table 8 shows ranking given by farmers to the major fungicides brands in study area.

“Statistically significant”

Table8. Insecticides brands ranked by farmers

S. No.	One-Sample Statistics		One-Sample Test		Rank
	N	Mean	df	Sig. (2-tailed)	
Company					
DUPONT	150	1.5867	149	.000	1
BAYER	150	2.4067	149	.000	2
PI	150	3.5267	149	.000	3
EXCEL	150	3.1467	149	.000	4
OTHERS	150	4.3200	149	.000	5

Table 9 is a simple presentation of farmers’ preference for brand selection, what are the parameters they consider during buying any pesticide. Here company name, quality, application method of product and dealers recommendations are most preferred factors. (On the basis of weighted average) “Statistically significant”

Table9. Farmers' preference for brand selection

S. No.	One-Sample Statistics			One-Sample Test	
		N	Mean	df	Sig. (2-tailed)
1	Company Name	150	4.4733	149	.000
2	Quality	150	4.3800	149	.000
3	Application Method	150	4.0733	149	.000
4	Dealer Recommendation	150	3.8933	149	.000
5	Experience/Fellow Farmer	150	3.7000	149	.000
6	Price	150	3.2067	149	.000
7	Packaging	150	2.5800	149	.000
8	Discount	150	2.2467	149	.000

Based on a 5-point Likert scale where 1 = “Least Preferred, 2= Less Preferred, 3= Neutral, 4= Preferred and 5 = Most Preferred”

Source: Researcher’s computation from field data

Table 10 is showing association between different farmers’ categories and brand selection preference, which helps us to know about mind set of farmers.

Table10. Association of farmers’ categories and preference for brand selection

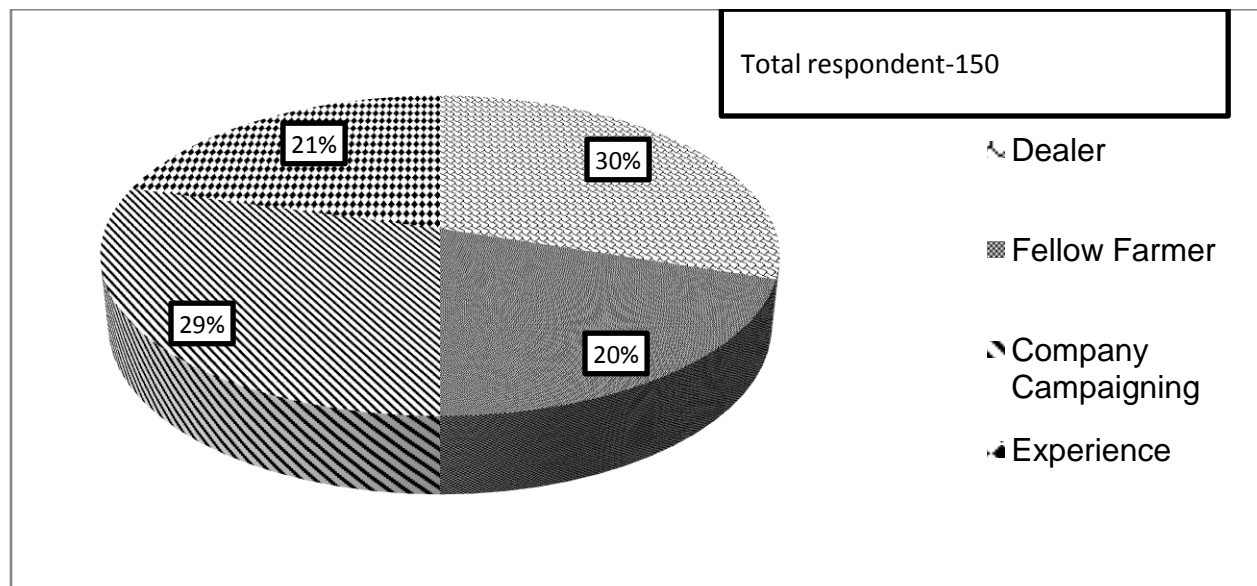
S. No.	Relationship between	Significance Level
1.	Application method of product and Age of farmers	Significant
2.	Experience and Age of farmers	Significant
3.	Price and Land holding of farmers	Significant
4.	Experience and Identification of Field problems	Significant
5.	Packaging and Identification of Field problems	Significant

Source-Based on cross tabulation and Chi square Value

Fig. 5 shows source of awareness about different pesticides products among farmers.

Table 11 is a simple presentation of farmers’ preference for promotional activity, which activity more preferred by farmers? Here demonstrations, farmer’s meeting, and individual contacts are most preferred activities. (On the basis of ranking) “Statistically significant”

Fig. 5 Source of awareness about pesticides products



Source: Researcher's computation from field data

Table11. Farmer's preference for promotional activities

Promotional Activity	Average (Ranking)	Ranking	Standard deviation
Demonstration	1.30	1	0.50
Farmer's meeting	1.82	2	0.51
Individual Contact	3.22	3	0.57
Van Campaigning	3.84	4	0.61
Literature distribution	5.10	5	0.57
Posting	5.91	6	0.49
Call Campaign	6.91	7	0.32

Source: Researcher's computation from field data

Table12. Association between education group and different promotional activities

S. No.	Relationship between	Significance Level
1.	Demonstration and Education of farmers	Significant
2.	Framers meeting and Education of farmers	Not Significant
3.	Individual contact and education of farmers	Significant
4.	Van campaigning and education of farmers	Not Significant
5.	Literature distribution and education of farmers	Not Significant
6.	Posting and education of farmers	Significant
7.	Call campaigning and education of farmers	Significant

Based on cross tabulation and Chi square Value

5.3 Dealers’ opinion about pesticide sector in Kelwara

Table 13 shows dealers’ preference for schemes those are provided by different companies, Margins, product discount and tours are more preferred by them. (On the basis of weighted average) “Statistically significant”

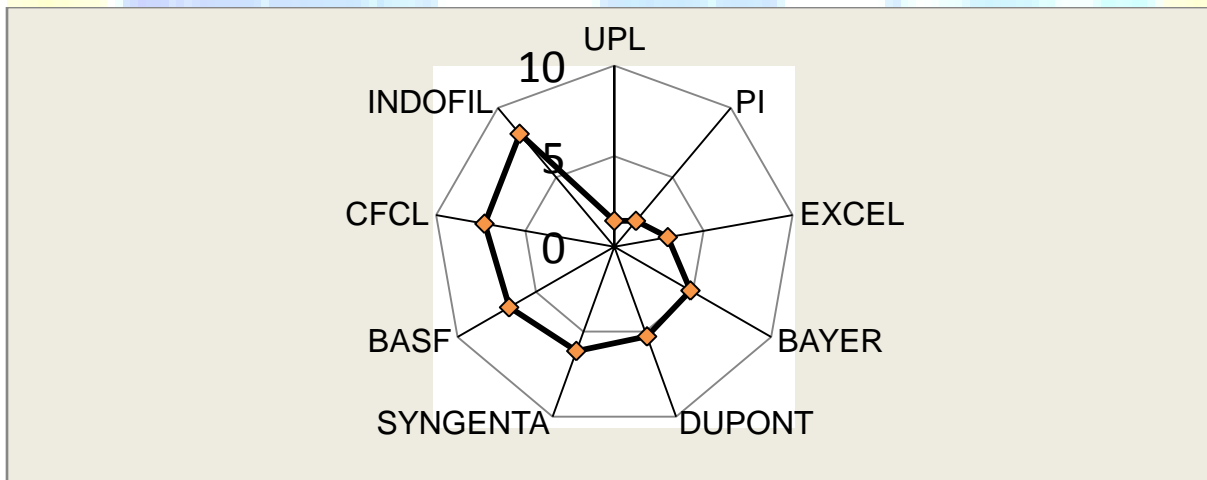
Table13. Dealers’ Preference for schemes

S. No.	One-Sample Statistics			One-Sample Test	
		N	Mean	df	Sig. (2-tailed)
1	Margins	7	4.2857	6	.000
2	Product Discounts	7	3.8571	6	.000
3	Tours	7	3.2857	6	.000
4	Coupons	7	3.0000	6	.000
5	Rewards	7	2.1429	6	.000

Based on a 5-point Likert scale where 1 = “Extremely Not Important, 2= Not Important, 3= somewhat, 4= Important and 5 = Extremely Important”

Source: Researcher’s computation from field data

Fig.6 Ranking of pesticides players (Dealers’ opinion on the basis of promotional activities)



Source: Researcher’s computation from field data

Fig. 6 shows ranking of major pesticides players on the basis of dealers’ opinion, UPL got 1st rank, followed by PI, EXCEL, BAYER, and DUPONT etc.

5. Conclusion

- Total market size of pesticides 306 ` lakh in *Kelwara*, Excel Crop Care Ltd. has 9.52 % and 57 % shared in fungicides and Insecticides.
- 87.3 % of total sample size belongs to late young to late middle age group and 41.3 % are metric passed, 95.3 % of total sample size comes under the semi medium and medium category.
- 54 % field problems occurred in paddy crop by fungus and followed by insects (30 %) and weeds (16 %).
- UPL is leading fungicide brand in study area followed by BASF while DUPONT has first rank as insecticide brand.
- Company name is most preferred factor and Discounts are least preferred factor during brand selection for farmers.
- Source of awareness about pesticides products are Dealers (30%) & Company campaigning (29%).
- Demonstration is the most preferred activity and Call campaigning is least preferred.
- Margin is most important for dealers and unexpected rewards are least.
- UPL is leading player in term of promotional activities while Excel crop care Ltd. is third according to dealer's opinion.

6. References

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