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STUDY ON PROMOTIONAL STRATEGIES OF NON-SYSTEMIC INSECTICIDE IN KAUSHAMBI DISTRICT OF UTTAR PRADESH

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ABSTRACT

India's insecticide industry is undergoing changes, including a shift towards safer, sustainable solutions, increased demand for biological and botanical insecticides, digital technology integration, regulatory focus on risk assessment, integrated pest management practices, and increased investment in research and development. The study aims to identify promotional tools for enhancing Barazide use, focusing on socio-economic profiles and non-systemic insecticides. Strategies include product differentiation, education, targeted marketing campaigns, strategic partnerships, and pricing. These strategies are crucial for meeting the evolving needs of farmers, consumers, and regulatory authorities.

Keywords: - Barazide, Digital Technologies, Socio-Economic, Promotional Tools

INTRODUCTION

Insecticides have a long history, dating back to ancient civilizations like the Sumerians, Egyptians, and Greeks. They were used to control insect populations that threaten crops, livestock, and human health. The 19th century saw significant advancements in insecticide research and innovation, with the discovery of chemical compounds like nicotine and rotenone. The 20th century saw the synthesis of synthetic organic compounds, such as organochlorine insecticides like dichlorobiphenyl trichloroethane (DDT), which revolutionized pest control practices. However, their widespread use led to environmental contamination and ecological harm. Organophosphate and carbamate insecticides emerged as alternatives, targeting insect nervous systems by inhibiting acetylcholinesterase, an enzyme critical for neurotransmission. The latter half of the 20th century saw further diversification in insecticide classes, including pyrethroid insecticides and neonicotinoid insecticides. In recent decades, there has been growing recognition of the need for sustainable pest management practices that integrate chemical, biological, cultural, and mechanical control methods.

Integrated Pest Management (IPM) approaches emphasize the judicious use of insecticides in conjunction with other control measures to minimize environmental impacts and mitigate the development of pesticide resistance.

The classification of insecticides based on modes of action provides a framework for understanding how these chemicals interact with the physiology of target organisms. Contact insecticides interfere with essential physiological processes in insects. Systemic insecticides are absorbed by plants and distributed throughout their vascular systems. Ingested insecticides disrupt internal physiological functions, resulting in mortality or decreased reproductive success. Insect growth regulators disrupt the growth and development of insects by interfering with hormonal signalling pathways or inhibiting the synthesis of chitin. Repellents and antifeedants deter insects from feeding or settling on treated surfaces, reducing damage to crops and structures.

The insecticide industry in India is experiencing several emerging trends, including a shift towards safer and sustainable solutions, increasing demand for biological and botanical insecticides, the integration of digital technologies, regulatory focus on risk assessment and compliance, adoption of integrated pest management practices, and increasing investment in research and development. These trends are driving a transformation in the landscape of pest management and agricultural sustainability in India, offering opportunities for innovation, collaboration, and positive environmental outcomes.

India's regulatory frameworks for insecticides are essential to ensure the safe and effective use of these chemicals while safeguarding human health, the environment, and agricultural productivity. The CIBRC serve as the apex regulatory bodies responsible for overseeing the registration, regulation, and monitoring of insecticides in India. The Insecticides Act, 1968, and the Insecticides Rules, 1971, constitute the primary legislation governing the import, export, manufacture, distribution, sale, and use of insecticides in India.

Insecticides must undergo rigorous registration procedures before they can be marketed and sold in India. Manufacturers are required to submit detailed scientific data on the composition, efficacy, toxicity, environmental fate, and safety of their products to the Registration Committee for evaluation. In addition to offering promising solutions, it's crucial for manufacturers and marketers of non-systemic insecticides to adhere meticulously to labeling and packaging regulations stipulated under the Insecticides Rules, 1971. These rules outline specific requirements regarding the information that must be provided on product labels, including active ingredients, usage instructions, safety precautions, and environmental considerations. Compliance with these regulations not only ensures transparency and safety for consumers but also helps build trust and credibility in the marketplace.

Furthermore, stringent quality control measures and monitoring protocols are enforced by governmental agencies to uphold product efficacy, safety, and environmental standards. These measures involve regular inspections, testing of samples, and enforcement of penalties for non-compliance. By adhering to these regulations and actively participating in quality assurance programs, manufacturers and marketers can demonstrate their commitment to producing safe and effective non-systemic insecticides while

contributing to the overall integrity and sustainability of the agricultural industry.

The Pesticide Management Bill, 2020, introduced by the Government of India in 2020, aims to modernize and strengthen the regulatory framework for pesticides, including insecticides, by enhancing regulatory oversight, promoting sustainable pest management practices, protecting human health and the environment, and streamlining registration procedures.

MATERIALS AND METHODS

The study used a multi-stage stratified random sampling procedure to select a sample from Kaushambi district in Uttar Pradesh. The district, located in the southern part of Uttar Pradesh, is known for its high production of vegetables with high use of pesticides. Sirathu block, one of the eight blocks in the district, was chosen due to its high use of pesticides. A list of villages was obtained from the block development office, and 5% were selected randomly. Respondents were selected from a list of farmers, with 5-10% selected randomly. Manjhanpur was chosen for primary data collection, as it is a primary market where ADAMA LTD products are sold and where marketing of insecticides is applied to attract consumers. Primary data was collected from traders and farmers using semi-structured questionnaires, while secondary data was collected from various websites and agricultural offices.

STATISTICAL ANALYSIS

Chi-square test

The chi-square goodness of fit test determines whether sample data aligns with a specified population distribution. In contrast, this test for independence evaluates the major relationship between two variables in a contingency table, assessing whether of these distributions of category differ from each other or not.

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where,

O is the observed and E is the expected value and "i" is the "ith" position in the contingency table.

Garret ranking technique

In this approach, respondents are asked to assign ranks to these factors based on their experiences or perceptions. The assigned ranks reflect the respondents' priorities or the severity of the issues they face. These ranks are then converted into score values using a specified formula, allowing for a quantitative analysis of the data. This process helps in identifying the most significant factors and provides a clear understanding of the respondents' preferences and the challenges they encounter.

Percent position - 100 *(R_{ij} - 0.50)/N_j

Simple Percentage Analysis

Simple percentage analysis refers to a ratio that helps in understanding the data more effectively. Using absolute figures alone can make it challenging to interpret the meaning of the collected data. However, by calculating percentages, it becomes easier to discern the relative differences between two or more attributes. This method allows for a clearer comparison and understanding of the data, facilitating the identification of trends, patterns, and significant variations among the attributes being studied. By expressing data in percentages, complex information is simplified, making it more accessible and

meaningful for analysis and decision-making.

Percentage = No. of Respondents * 100 / Total no. of respondents

Likert Scale

A Likert scale functions as a rating system employed to gauge the opinions, attitudes, or behaviours of respondents, providing a structured approach to operationalize personality traits or perceptions. In data collection, participants encounter Likert-type questions or statements, alongside a spectrum of possible responses typically ranging from 5 to 7 options. Each response is then assigned a numerical value, facilitating quantitative analysis of the gathered data. Here's the process to analyse Likert scale data:

For each question type on the questionnaire, each sentiment level Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree.

Sum the total scores and divide by the number of respondents to get an average sentiment score. For example, if the responses are 1 (Strongly Disagree) and 5 (Strongly Agree), the total is 6. Dividing by 2 respondents yields an average score of 3.

RESULTS AND DISCUSSION

Table 1: Age of Respondents

Sr. No.	Age (in years)	Farmers (Numbers)					Total	Total Percentage
		Marginal	Small	Semi-medium	Medium	Large		
1	Below 30 years	11	8	5	6	4	**34**	**28%**
2	Between 30 to 50 years	15	12	8	4	6	**45**	**38%**
3	Above 50 years	8	5	3	3	2	**21**	**18%**
	Total	**34**	**25**	**16**	**13**	**12**	**100**	**100%**

Table 1, reveals about the age of respondents in which 8% were between 30 years to 50 years followed by 28% were below 30 years and 18% were above 40 years.

Table 2: Education qualification of the Respondents

Sr. No.	Education	No of Farmers					Total	Percentage
		Marginal	Small	Semi-medium	Medium	Large		
1	Illiterate	2	1	2	1	0	6	6%
2	Primary level	4	4	2	2	0	12	12%
3	Middle school	7	3	5	3	1	19	19%
4	High school	6	5	4	9	3	27	27%
5	Intermediate	9	4	2	3	2	20	20%
6	Graduate	2	2	1	4	3	12	12%
7	Post Graduate	0	1	0	1	2	4	4%
	Grand Total	**30**	**20**	**16**	**23**	**11**	**100**	**100%**

Table 2, reveals about the literacy of farmers in which 27% had done high schooling followed by 20% intermediate, 19% middle school, 12% graduate and primary level, 6% were illiterate and 4% had done post graduate.

Table 3: Yearly average income level wise distribution of the growers (Rs/Yr)

Sr. No.	Income	Sample farmers					Total	Percentage
		Marginal	Small	Semi-medium	Medium	Large		
1	Below 50000	5	3	1	1	0	10	10%
2	50001 to 100000	8	9	3	7	2	29	29%
3	100001 to 150000	12	7	8	9	5	41	41%
4	150001 to 200000	3	2	3	4	3	15	15%
5	Above 200000	0	0	1	2	2	5	5%
	Total	**28**	**21**	**16**	**23**	**12**	**100**	100%

Table 3, reveals about the income level of respondents in which 41% has income of Rs.100001 to Rs.150000 followed by 29% has income of Rs 50001 to 100000, 15% has income of Rs. 150001 to 200000, 10% has income below Rs 50000 and 5% has income above Rs.20000.

Table 4: Occupation of respondents

Sr. No.	Particular (Occupation)	Farmers Size					Total	Percentage
		Medium	Small	Semi-medium	Medium	Large		
1	Agriculture	11	5	3	4	3	**26**	**26%**
2	Horticulture (other than cotton)	8	10	5	6	4	**33**	**33%**
3	Animal Husbandry	6	4	2	4	0	**16**	**16%**
4	Salaried	2	2	1	3	2	**10**	**10%**
5	Business / Profession	4	2	5	3	1	**15**	**15%**
	Total	**31**	**23**	**16**	**20**	**10**	**100**	**100%**

Table 4, provides detailed information regarding the occupations of the surveyed farmers. According to the data, 33% of the respondents are engaged in horticulture, making it the most common occupation among the group and followed by 26% who are involved in agriculture. Additionally, 16% of the farmers reported that their primary occupation is animal husbandry. Business activities account for the occupation of 15% of the respondents, while 10% of the farmers are in salaried positions. This distribution highlights the diverse economic activities undertaken by the farming community in the survey.

Table 5: Promotional strategies followed for enhancing the use of Barazide

S. No.	Constraints	No. of Farmers	Percentage	Garett Rank
1	Jeep campaigns	84	64.52	I
2	Pamphlets, Banners and news advertisements	80	63.12	II
3	Farmers meeting	82	62.51	III
4	Social media	83	62.14	IV
5	Farmer visit to research plot	83	61.41	V
6	Television	83	58.73	VI
7	Field demonstration	81	59.44	VII
8	Sample distribution	80	58.65	VIII

Table 5, provides insights into the promotional strategies employed for marketing Virtako, as evaluated using the Garrett ranking technique. According to the rankings, Jeep campaigns are identified as the most effective strategy, securing the top position (Rank I) and this is trailed by the combination of pamphlets, banners, and newspaper advertisements, which collectively hold the second rank (Rank II). Farmers' meetings are deemed the third most effective strategy (Rank III), while social media promotions are ranked fourth (Rank IV). The strategy of having farmers visit research plots is ranked fifth (Rank V). Television advertisements follow, occupying the sixth rank (Rank VI). Field demonstrations are placed seventh (Rank VII), and sample distribution is considered the least effective strategy, coming in at eighth place (Rank VIII). This ranking provides a clear hierarchy of the promotional tactics in terms of their perceived effectiveness for marketing Virtako.

CONCLUSION

Non-systemic insecticides present a compelling solution for manufacturers and marketers seeking to address the ever-changing demands of farmers, consumers, and regulatory bodies. These insecticides offer distinct advantages in terms of their targeted action and reduced environmental impact compared to systemic alternatives. By targeting pests directly on contact, non-systemic insecticides provide effective pest control while minimizing potential harm to beneficial insects, animals, and the environment at large. This targeted approach aligns well with the growing consumer preference for sustainable and eco-friendly agricultural practices.

Promotion strategies focus on product differentiation, education, targeted marketing campaigns, strategic partnerships, and pricing strategies. Education and training equip farmers, agronomists, and distributors with the knowledge to effectively use these products. Partnerships with agricultural cooperatives, extension services, and industry stakeholders facilitate grassroots adoption. Consumer awareness campaigns raise awareness about sustainable pest management practices and food safety.

REFERENCES

Anonymous (2014). Agrochemical. Retrieved from http://en.wikipedia.org/wiki/Agrochemical on 17th October, 2019.

Barik (2010). Cotton statistics at a glance. Directorate of cotton development, Ministry of Agriculture, Government of India, Mumbai, Maharashtra. Retrieved from www.dacnet.nic.in on 8th July 2019.

Bhardwaj, T. and Sharma, J.P. (2013). Impact of Pesticides Application in Agricultural Industry: An Indian Scenario, International Journal of Agriculture and Food Science Technology

Padmanaban, N.R. and Sankaranarayanan, K. (1999) 'Business Experience, product lines of dealers and farmers loyalty to dealer for pesticides in southern Tamil Nadu', Indian journal of agricultural marketing

Report on Indian Agrochemical Industry (2015), "Ushering in the 2nd Green Revolution: Role of Crop Protection Chemicals", FICCI and Tata Strategic Management Group.

Sivakumar (1994). Buying behaviour of farmers with reference to pesticides, Journal of Agricultural Marketing, 8.

Sinha's. (2002). Brand Positioning of Pesticides and Farmers Perception and Preference for Different Brands in Untapped Areas of Udham Singh Nagar and Nainital. Project Report submitted to IABM, RAU, Bikaner.

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