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A study on attitude of vegetable farmers towards application of pesticides in North 24 Parganas District of West Bengal

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Abstract

The indiscriminate use of pesticides in vegetable cultivation has raised serious concerns regarding environmental sustainability and farmer health. This study was conducted to assess the attitudes of vegetable farmers towards pesticide application in the North 24 Parganas district of West Bengal. Employing a descriptive research design, primary data were collected from 120 respondents across four purposively selected villages in Amdanga block. The findings revealed that a majority (56.67%) of the respondents had a favorable attitude toward pesticide use, followed by 28.33% with a neutral stance, and 15% with an unfavorable attitude. The study indicates a moderately positive perception among farmers, shaped by factors such as media exposure, training, and awareness. However, gaps persist in knowledge regarding sustainable practices and the adoption of organic alternatives. The results underscore the need for enhanced extension services, the promotion of integrated pest management (IPM), and policy-level support to ensure health, environmental safety, and sustainable agricultural productivity.

Keywords: Pesticide use, vegetable farming, farmers' attitude, West Bengal, agricultural extension, integrated pest management

Introduction

Pesticides play an important role in Indian agriculture by increasing crop productivity and reducing losses due to pest infestations. However, the excessive and unregulated use of chemical pesticides has led to growing concerns over their impact on the environment and human health. In West Bengal, particularly in the North 24 Parganas district, vegetable cultivation is intensive, and reliance on pesticides is notably high.

Farmers in this region often operate with limited awareness regarding the safe and judicious use of pesticides, which leads to overuse, improper handling, and unsafe disposal, contributing to environmental degradation and health risks. Despite the economic benefits derived from pesticide use, their long-term negative consequences on soil health, food safety, and human well-being are becoming increasingly evident.

This study aims to:

- Assess the attitude of vegetable farmers towards pesticide use.
- Identify key socio-economic factors influencing their perception and practices.
- Explore their level of awareness about alternative and sustainable pest control measures.

Through this investigation, the research attempts to uncover the drivers of pesticide dependence and suggest appropriate

interventions for safer and more sustainable farming practices.

Materials and Methods

The study was conducted in the Amdanga block of North 24 Parganas district, West Bengal. Four villages were purposively selected based on the intensity of vegetable cultivation and pesticide usage. A total of 120 vegetable farmers were chosen using stratified random sampling to ensure representation across different landholding categories and socio-economic groups.

Data were collected through a structured interview schedule, comprising both closed and open-ended questions. Farmers' attitudes toward pesticide application were measured using a five-point Likert scale, ranging from "strongly favorable" to "strongly unfavorable."

The research employed a descriptive research design, and variables such as:

- Age
- Educational qualification
- Annual income
- Landholding size
- Extension contact
- Awareness and training exposure

were recorded and analyzed using appropriate statistical techniques (percentage analysis, frequency distribution, and

cross-tabulation) to interpret farmers' attitudes and the factors influencing them.

Results and Discussion

The results are presented under three categories: statement-wise responses, attitude categorization, and correlation with socio-economic factors.

Table 1: Statement-wise Attitude of Respondents Towards Pesticide Application (n = 120)

Sl. No.	Attitude Statement	Agree (%)	Undecided / Disagree (%)
1	Pesticide use is essential for higher yield	86.67	5.00 / 8.33
2	Pesticides are effective for pest control	71.67	22.50 / 5.83
3	Pesticide ensures crop quality	87.50	12.50 / 0.00
4	I prefer organic methods instead of chemical ones	7.50	23.33 / 69.17
5	Pesticides are used to meet market demand	75.83	18.33 / 5.83
6	Pesticide use is not sustainable	37.50	55.00 / 7.50
7	Residues do not affect health	37.50	49.17 / 13.33
8	Pesticides are safe under proper guidance	63.33	10.00 / 26.67
9	Cost of pesticides is justified by output	41.67	19.17 / 39.17
10	Reduced pesticide use improves soil and yield	56.67	34.17 / 9.17
11	Government subsidy helps in pesticide adoption	90.00	7.50 / 2.50
12	Pesticides should be used only during outbreaks	72.50	11.67 / 15.83
13	Training is essential for safe usage	83.33	15.00 / 1.67
14	Overuse of pesticides is harmful	66.67	30.83 / 2.50

Interpretation

Table 1 highlights the perceptions of vegetable farmers on various aspects of pesticide application. A high percentage of agreement with statements such as "Pesticide use is essential for higher yield" (86.67%) and "Pesticides ensure crop quality" (87.50%) indicates a generally favorable outlook on the benefits of pesticide use.

Conversely, 69.17% of respondents disagreed with the statement "I prefer organic methods instead of chemical ones," indicating a low inclination toward organic farming. Although 66.67% agreed that overuse is harmful, only 37.5% agreed that pesticide use is not sustainable, revealing inconsistencies in understanding long-term consequences.

A significant majority acknowledged the role of government subsidies (90%) and the importance of training (83.33%), reinforcing the need for institutional support to promote safe and informed pesticide practices.

Table 2: Categorization of Respondents Based on Attitude Score

Attitude Category	Score Range	Frequency	Percentage
Low	28-30	7	5.83%
Medium	31-38	103	85.83%
High	39-41	10	8.33%
Total	—	120	100.00%

Interpretation

Table 2 shows that the majority of respondents (85.83%)

fall under the medium attitude category, reflecting a balanced and cautious approach toward pesticide use. Only 5.83% displayed a low attitude, indicating low concern or negative views, while 8.33% exhibited a highly favorable attitude. This distribution suggests that while pesticides are generally accepted, most farmers remain open to alternative practices if provided with proper education and support.

Table 3: Correlation Between Socio-Economic Variables and Attitude

Variable	Correlation Coefficient	Significance
Age	0.7501	Significant
Education	0.9985	Highly Significant
Annual Income	0.2134	Not Significant
Occupation	0.9528	Significant
Housing Pattern	0.9720	Significant
Landholding	-0.3886	Not Significant
Family Type	0.4760	Moderate
Extension Contacts	0.9989	Highly Significant
Mass Media Exposure	0.9807	Highly Significant
Economic Motivation	0.7019	Significant
Social Participation	0.7601	Significant
Sources of Agricultural Information	0.9986	Highly Significant
Scientific Orientation	0.9845	Highly Significant
Risk Orientation	0.4396	Moderate

Interpretation

Table 3 illustrates that variables such as education, extension contact, mass media exposure, scientific orientation, and access to agricultural information are highly significant and positively correlated with favorable attitudes toward pesticide use. This suggests that better-informed and more engaged farmers are more likely to adopt safe and responsible pesticide practices.

On the other hand, variables like landholding size and annual income show no significant correlation, indicating that awareness and knowledge—not economic status—primarily influence attitudes.

Conclusion

The study concludes that vegetable farmers in North 24 Parganas generally exhibit a medium to favorable attitude toward pesticide use. Factors such as education level, access to extension services, media exposure, and scientific orientation were significantly associated with positive attitudes.

While pesticides are largely viewed as necessary for crop protection and market requirements, there remains limited preference for organic or sustainable alternatives. Notably, farmers recognized the harmful effects of overuse but did not fully internalize the long-term unsustainability of pesticide reliance.

To promote safer and more environmentally conscious practices, targeted training programs, awareness campaigns, and participatory extension approaches should be prioritized. Encouraging Integrated Pest Management (IPM) and strengthening policy-level support can help shift farmer perceptions and reduce dependency on chemical pesticides over time.

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