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To evaluate the farmers' knowledge and awareness of IPM principles and practices in Raipur district, Chhattisgarh

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Abstract

A study was carried out to collect data through a questionnaire survey conducted with farmers from two villages, Aamdi and Banarsi, in the Raipur district of Chhattisgarh. Frequency counts and percentages were used to analyse the data. This study involved 120 farmers (60 from each village) to assess their knowledge and adoption of Integrated Pest Management (IPM) methods. Farmers in Aamdi showed higher awareness of IPM (85%) and greater usage (68%) compared to those in Banarsi (73% awareness, 58% usage). Common IPM practices included crop rotation, neem-based pesticides, and natural pest control. Many farmers in both villages reported that IPM helps save money (Aamdi: 65%, Banarsi: 55%), although they still faced challenges such as limited knowledge and high costs. Most farmers received IPM information from input shops (58%), while fewer relied on extension officers (20.2%) or Krishi Vigyan Kendras (15.8%). Social media and fellow farmers played a smaller role. Despite the challenges, many farmers expressed willingness to adopt IPM if proper training was provided (Aamdi: 80%, Banarsi: 75%). This suggests that improved support and education can promote wider adoption of IPM practices.

Keywords: IPM, farmers, Aamdi, Banarsi

Introduction

The concept of Integrated Pest Management (IPM), a sustainable approach to pest control, has been practiced for a long time. IPM is described as a decision-making process that combines various strategies to effectively manage all types of pests including insects, diseases, weeds, and vertebrates while ensuring both ecological sustainability and economic efficiency (RJ Prokopy, 2003) ^[5]. Although IPM has been defined in different ways, earlier models primarily emphasized ecological aspects and, to some extent, evolutionary aspects of pest management (Peterson *et al.*, 2018) ^[4]. A recent IPM pyramid proposed by Stenberg (2017) ^[6] highlighted the absence of a holistic approach that integrates both traditional and modern pest management tools.

IPM is a methodical strategy that integrates multiple pest-control measures into a single program. It involves the use of various techniques instead of relying solely on chemical pesticides. Common approaches include cultural, biological, genetic, physical, legislative, and mechanical methods, which help reduce dependence on synthetic chemicals. The goal of IPM is to keep pest populations below levels that cause economic damage, thereby ensuring safe, eco-friendly, and cost-effective pest control (Hagstrum and Flinn, 2018; Dara, 2019) ^[2, 1]. IPM refers to managing crops using a variety of methods to maintain pest levels below a certain economic threshold.

In the context of sustainable agriculture, adaptation strategies can also be classified into general adaptation

strategies such as modification of sowing time and alternative irrigation methods and climate-smart strategies like alternate wetting and drying, solar-powered irrigation, and biogas production (IPCC, 2007) ^[3]. These strategies can complement IPM by enhancing resilience and resource efficiency.

This study emphasizes the importance of IPM in improving crop productivity and examines various management approaches. It explores advancements in bio-based integrated pest and weed control within agricultural production systems, considering their potential outcomes and future directions. Furthermore, it assesses current levels of awareness and adoption of IPM, along with the tools and resources available in modern practice. The study also identifies key challenges and outlines future requirements to enhance IPM adoption in today's agricultural systems. Ultimately, the primary aim is to present innovative strategies that help farmers increase the use of natural pest control methods as sustainable alternatives to synthetic pesticides.

Materials and Methods

The respondents were interviewed through personal interviews. Before the interview, the purpose of the study was explained to the respondents to gain their trust, and efforts were made to establish a good rapport with them. They were assured that the information provided would remain confidential. The interviews were conducted in a formal yet friendly atmosphere, ensuring a smooth and

uncomplicated process.

Selection of district: Raipur district was selected purposively due to ease of investigation

Selection of villages: Aamdi and Banarsi villages were selected randomly for the present study.

Selection of respondent: 60 farmers from each village were selected randomly to constitute a total 120 respondents.

Statistical analysis

Data collected were qualitative as well as quantitative. The quantitative data were interpreted in terms of percentage and qualitative data were tabulated on the basis of approved categorization method as described earlier, the following statistical techniques were used in the study.

1. Frequency (No. of respondents)

2. Percentage $P = \frac{x}{N} \times 100$

Where,

P = Percentage

X = Frequency of respondents

N = Total numbers of respondents

Results and Discussion

It is essential to understand the detailed demographic profile of the sampled households, which is presented in Table 1. The table reveals that a total of 120 households were randomly selected, comprising marginal, small, medium,

and large farmers. Data were collected through personal interviews based on the objectives of the study.

Table 1: Distribution of respondents according to the size of their land holdings. n =120

S. No.	Land Holding Type	Frequency	Percentage (%)
1	Marginal (<1 ha)	50	41.67
2	Small (1-2 ha)	20	16.67
3	Semi-Medium (2-4 ha)	48	40.00
4	Medium (4-10 ha)	2	1.67
5	Large (>10 ha)	0	0.00

A comparative survey of 120 farmers 60 each from Aamdi and Banarsi highlights variations in awareness and adoption of Integrated Pest Management (IPM) practices. Awareness of IPM was higher in Aamdi (85%) than in Banarsi (73%). Understanding of IPM and its components, such as crop rotation and neem-based pesticides, was also more prevalent in Aamdi. In terms of practice, 68% of Aamdi farmers reported using some IPM techniques compared to 58% in Banarsi, with higher usage of biological control, pheromone traps, and botanical pesticides in Aamdi. While a substantial number of farmers in both villages (Aamdi: 65%, Banarsi: 55%) recognized the cost-saving benefits of IPM, challenges such as lack of knowledge and high input costs persisted. Notably, willingness to adopt IPM with proper training and support was high in both villages 80% in Aamdi and 75% in Banarsi indicating strong potential for wider adoption through targeted interventions. These findings are presented in Table 2.

Table 2: Comparative Survey Results: IPM Awareness & Adoption in Aamdi and Banarsi (n = 120 farmers)

Question	Aamdi Yes (%)	Yes count	Banarsi Yes (%)	Yes Count
Heard about IPM	85%	51	73%	44
Source of IPM Info: Fellow Farmers	33%	20	30%	18
Understands IPM correctly	60%	36	45%	27
Knows crop rotation as part of IPM	52%	31	43%	26
Knows neem-based pesticides	45%	27	38%	23
Using any IPM technique	68%	41	58%	35
Uses biological control methods	35%	21	30%	18
Uses pheromone traps	28%	17	25%	15
Use of sticky traps	58%	35	68%	41
Uses neem-based or botanical pesticides	47%	28	38%	23
Relies >50% on non-chemical pest control	40%	24	35%	21
Attended any IPM training	33%	20	27%	16
Sees cost-saving benefit in using IPM	65%	39	55%	33
Faces challenge: Lack of knowledge	42%	25	45%	27
Faces challenge: High cost of IPM inputs	35%	21	32%	19
Willing to adopt IPM if training/support is provided	80%	48	75%	45

(60 farmers from each village)

Table 3 presents data from a survey of 120 farmers (60 each from Aamdi and Banarsi) assessing awareness and adoption of Integrated Pest Management (IPM). Input shops were the primary source of information for 58% of the farmers, indicating a preference for quick, chemical-based solutions. Rural Agricultural Extension Officers (20.2%) and Krishi Vigyan Kendras (15.8%) provided guidance on cultural,

physical, and biological methods, though their reach remained limited. Social media (4%) and progressive farmers (2%) played only a minor role in IPM knowledge dissemination. These findings highlight a heavy reliance on commercial sources, emphasizing the need to strengthen extension services, KVKs, and peer learning networks to promote sustainable, non-chemical IPM practices.

Table 3: Pest management strategy of selected responded

S. No.	Source of IPM Information	Number of Farmers	Percentage (%)	Domain of IPM Covered
1	Input Shops	70	58.0%	Chemical & Commercial Inputs
2	Rural Agricultural Extension Officers (RAEOs)	24	20.2%	Cultural & Physical Methods
3	Krishi Vigyan Kendras (KVKs)	19	15.8%	Cultural, Physical & Biological
4	Social media	5	4.0%	Mixed/General Awareness
5	Progressive Farmers	2	2.0%	Biological & Cultural Practices
Total		120	100%	

Feedback from 120 farmers highlighted key challenges in adopting Integrated Pest Management (IPM). The main issues were lack of awareness (90%), limited availability of inputs (87.5%), and the complexity of IPM techniques (85%). Farmers also reported inadequate support from agricultural officers (78.33%) and insufficient training services (76.66%). Inconsistent results (71.66%) further reduced confidence in IPM practices. These findings are presented in Table 4.

Table 4: Feedback perceived from the respondent regarding IPM

Problems	Frequency	Percentage (%)
Availability of Inputs	105	87.5
Lack of Awareness and Knowledge	108	90
Inadequate Training and Extension Services	92	76.66
Inconsistent Results	86	71.66
Limited Support from Agricultural Officers	94	78.33
Complexity of IPM Techniques	102	85

**Fig 1:** Demonstrating and explaining the use of yellow sticky traps and pheromone traps**Fig 2:** Interview with a farmer discussing integrated pest management (IPM) strategies.**Fig 3:** Explanation of Integrated Pest Management (IPM).

Conclusion

The study was conducted with the aim of understanding the demographic and socio-economic profile of selected farmers, identifying the prevalent insect species in their fields, and enhancing their knowledge through awareness programs on insect pest management. The findings provided valuable insights into the farmers' backgrounds, which are essential for designing targeted interventions. The documentation of insect species helped in recognizing key pest challenges affecting crop productivity. Furthermore, the awareness programs conducted using various extension methods such as demonstrations, training sessions, and field visits proved effective in educating farmers about sustainable insect management practices, including the use of biological control agents and biopesticides. These efforts are expected to contribute to improved pest control strategies and support environmentally sound agricultural practices.

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References

1. Dara SK. The new integrated pest management paradigm for the modern age. *J Integr Pest Manag.* 2019;10(1):12.
2. Hagstrum DW, Flinn PW. Integrated pest management. In: Hagstrum DW, Phillips TW, Cuperus GW, editors. *Integrated Management of Insects in Stored Products*. Boca Raton: CRC Press; 2018. p. 399-407.
3. IPCC. *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press; 2007.
4. Peterson RK, Higley LG, Pedigo LP. Whatever happened to IPM? *Am Entomol.* 2018;64(3):146-50.
5. Prokopy RJ. Two decades of bottom-up, ecologically based pest management in a small commercial apple orchard in Massachusetts. *Agric Ecosyst Environ.* 2003;94:299-309.
6. Stenberg JA. A conceptual framework for integrated pest management. *Trends Plant Sci.* 2017;22:749-69.