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A study on satisfaction level and constraints faced by farmers in adopting the bio control products in western zone of Tamil Nadu

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Abstract

Despite increasing crop yields, the so-called green revolution (GR) has failed to ensure agricultural sustainability in the long run. They have also resulted in soil degradation and a plethora of other environmental and health issues, resulting in the emergence of Biocontrol products, which are environmentally helpful because they are created from naturally existing microbes, plants, and insects. This study investigates the awareness level, satisfaction level of bio control product among Western zone of Tamil Nadu farmers and it also studied the constraints faced by the farmers in adopting the bio control products. In this study, 120 samples were taken from the farmers of Western zone in Tamil Nadu. Garrett ranking and percentage analyses were the tools used for analysis. According to the survey, 47.5 percent of farmers were very knowledgeable about biocontrol products, and 63.33 percent were highly satisfied with their application. The study also found that non-availability of bio control products in local was the major constraint faced by farmers in adopting the bio control product. The study also suggested the ways to overcome the constraints faced by farmers such as increasing bio-retail input stores, creating awareness through advertisements, training programs through extension agencies.

Keywords: Bio control products, consumer satisfaction level, awareness level, constraints

Introduction

Agriculture is the backbone of Indian economy. The country's different climatic zones make it possible to cultivate a variety of crops (Powerhouse of Multiple crop production). Agricultural area occupies nearly 42 percent of India's total geographical area as net sown area. Among the total geographical area, Organic farming comprises barely 2% of the net cultivated area. According to APEDA, organic production climbed by 117.7% from 2016 to 2021, indicating that organic farming area and production would grow year by year. In India, synthetic pesticide consumption is high compared to the usage of biocontrol products because organic farmers are very low in number (Gupta and Dikshit, 2010) [2].

Even India's "Father of the Green Revolution," Professor Swaminathan, stated that Green Revolution agriculture was "exploitative agriculture" that resulted in ecological and social problems due to the excessive use of synthetic fertilisers, insecticides, fungicides, herbicides, and other pesticides (Kesavan and Swaminathan, 2008) [4]. Biopesticides, in contrast to synthetics, have developed as a green tool for sustainable agriculture. Besides, rapid use of pesticides poses a serious threat to the environment and human health. In addition, it is one of the main causes of growing agricultural production costs (Mishra *et al.*, 2020) [7]. Bio pesticides were plausible substitutes for some of the most dangerous chemical pesticides in the market. Pest resistance, public health, and other issues can be addressed and controlled by using biopesticides which serves as an alternative to synthetics (Khatar, 2012) [6]. Organic farming may help farmers increase their net incomes and agricultural employment while also boosting their self-sufficiency (Haneef *et al.*, 2019) [3]. As a result of the long-term impacts of pesticides in food and fodder (Khan and Taunk, 2016) [5], people are more drawn towards the organic agricultural goods, indicating that people are moving to organic products and enhancing the market potential of organic produce.

Objective of the study

- To study the awareness level of bio control products among Western zone farmers.
- To assess the satisfaction level towards usage of bio control product among Western Tamil Nadu farmers

- To identify the constraints faced by Western Tamil Nadu farmer to adopt the bio control products

Research Methodology

Selection of study area

The districts of Coimbatore, Erode, and Tiruppur in Tamil Nadu were chosen due to the large number of farmers have registered under organic certification in the individual organic certified farmers category, and a larger number of agricultural bio-input producing companies are performing well in the Western zones of Tamil Nadu. Coconut, bananas, and legumes, as well as turmeric, are the main crops farmed in this area using organic farming methods.

Selection of sample respondents

The sample respondents are included from the three districts (Western zone) such as Coimbatore (41 samples), Erode (33 samples), Tiruppur (46 samples). Totally 120 sample respondents were taken for the study of constraints faced by farmer in adopting the bio control products, satisfaction level and awareness level towards bio control products.

Period of the study

The study was conducted during May 2022 to June 2022.

Data collection and analysis

Purposive sampling technique was used as a sampling technique as well as data was collected by using well-structured interview schedule. Likert scale was used to collect

the data for satisfaction level of farmers. In this study 5 point likert scale was adopted for data collection (Chandrakala and Devi, 2016) [1].

S. No	Likert items (5)
1	Highly satisfied
2	Satisfied
3	Neutral
4	Unsatisfied
5	Highly unsatisfied

Percentage analysis and Garrett ranking were the tools used in this study (Zalkuwi *et al.*, 2015) [8]. Demographic characteristics, satisfaction level and awareness level were determined by using percentage analysis. Garrett ranking was measured by using this below formula

$$\text{Per cent position} = \frac{100 \times (R_{ij} - 0.5)}{N_j}$$

Where

R_{ij} = Ranking given to the i^{th} attribute by the j^{th} individual
 N_j = Number of attributes ranked by the j^{th} individual

In this study, Garrett ranking was used to identify the constraints faced by farmer to adopt the bio control products.

Analysis and findings

Table 1: Demographic characteristics of respondents

Demographic characteristics of respondent's farmers		
Gender	No of respondents (n=120)	Percentage (100%)
Male	115	95.8
Female	5	4.2
Age (Years)		
15-24	3	2.5
25-34	10	8.3
35-44	51	42.5
45-54	42	35
55< (above)	14	11.7
Marital status		
Single	6	5
Married	114	95
Family type		
Nuclear	100	83.33
Joint	20	16.66
Family size		
Small	23	19.2
Medium	71	59.2
Big	26	21.7
Educational status		
Illiterate	17	14.2
Primary school	32	26.7
Higher secondary	49	40.8
Graduation	20	16.7
Post graduate	2	1.7
Farming experience (Years)		
20 or less	55	45.8
21-30	48	40
31-40	13	10.8
41-50	3	2.5
Above 51	1	0.83
Farm size		
Marginal farmer	15	12.5
Small farmer	51	42.5

Medium farmer	47	39.2
Big farmer	7	5.8
Occupation type		
Agriculture	63	52.5
Agriculture + other	57	47.5
Purchasing place		
Retail shops	2	1.8
Whole seller / Progressive Farmers	77	64.2
Online	7	5.8
ADA office	18	15
Others	16	13.3

The table 1 showed that demographic characteristics of respondent farmers. The study revealed that number of male respondents (95.8%) were higher than female respondents in using the bio control products. The study found that major group of farmers belong to the age category 35-44 years (42.5%) followed by 45-54 years (42%). In marital status, married respondents (95%) were higher in number compared to unmarried persons. Likewise, in family type, joint family (16.66%) were lower compared to the nuclear family

(83.66%). In family size, medium size (59.2%) was higher than other type and in farming experience, majority of respondent's have experience lesser of 20 years (45.8%). Small farmers (42.5%) were high under the farm size towards using bio control products. Finally, wholesaler was the major source of place for purchasing bio control products to farmers.

Awareness level of bio control products

Table 2: Awareness level towards bio control products

S. No	Awareness level	No of respondents	Percentage
1	Low	8	6.66
2	Medium	55	45.8
3	High	57	47.5
Total		120	100

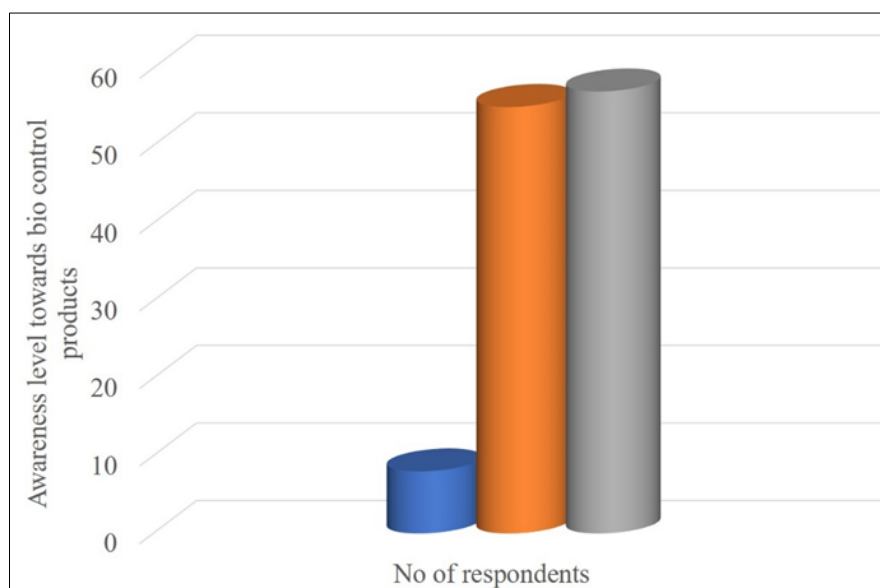


Fig 1: Awareness level towards bio control products

The Table 2 indicated that the majority of respondents have high level (47.5%) of awareness followed by 45.8 percent of farmers with medium level of awareness and 6.66 percent of

respondent having low level of awareness.

Satisfaction level of respondents in using bio control products

Table 3: Satisfaction level of respondents in using bio control products by farmers

S. No	Satisfaction level	No of respondents (n-120)	Percentage
1	Highly satisfied	76	63.33
2	Satisfied	34	28.33
3	Neutral	8	6.66
4	Unsatisfied	1	0.83
5	Highly satisfied	1	0.83
Total		120	100

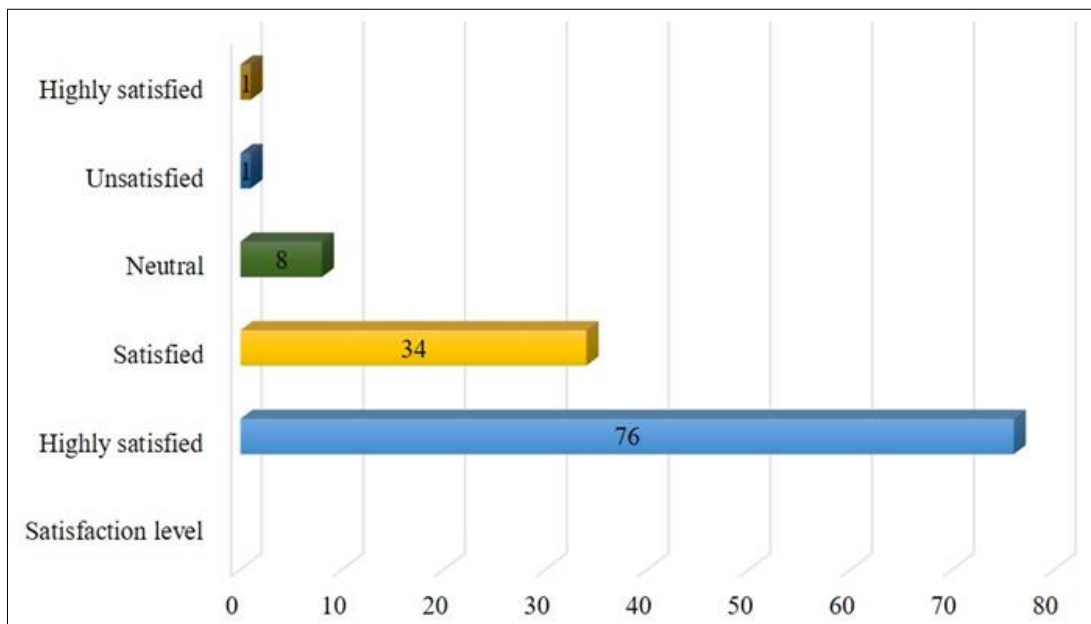


Fig 2: Satisfaction level of respondents in using bio control products by farmers

The Table 3 and figure 2 indicated the satisfaction level while using bio control products by farmers. The table revealed that, majority of respondents (92%) were satisfied by this bio control product. The study also revealed that, majority of farmers (63.33%) were highly satisfied while using bio control products, followed by 28.33% respondent farmers

were satisfied, 6.66% respondent farmers were neutral, 0.83% of respondent were dissatisfied.

Constraints faced by farmers to adopting bio control products

Table 4: Constraints faced by farmer to adopting bio control products

S. No	Constraints	Garrett score	Rank
1	Non-availability of bio control products at local level	77.075	I
2	Lack of skill knowledge about bio control	71.708	II
3	Lack of patience among farmers in their usage	61.95	III
4	Lack of awareness about bio control products	57.45	IV
5	Shorter shelf life	54.5	V
6	Low effectiveness and prevention by bio control	46.21	VI
7	Higher price of bio control product	45.09	VII

The study revealed that non-availability of bio control products at local level was the major constraints faced by farmer in adopting the bio control products with a Garrett score of 77.07 followed by lack of skill knowledge about bio control, lack of awareness about bio control products, shorter shelf life, low effectiveness and prevention by bio control, higher price of bio control product

agencies.

- Shelf life of bio control products was too low compare to synthetic pesticides, so producers should extend the shelf life by doing research on bio control products
- Promotion is the key factor for increasing awareness, so promoting bio control product through media such as advertisement, newspapers, leaflet, Television etc.,

Suggestions

- Still organic farmers and organic input companies are low in number, so government should promote organic farming and organic bio inputs through providing subsidiaries under schemes and projects
- In village level, synthetic retails stores were high in number compare to bio input retail stores, so number of bio input retail stores must be increased in local areas of Western zone districts.
- Awareness level towards bio control is increasing but it is in medium range only so creating awareness among farmers about bio control product, benefit organic input usage.
- Farmers lack in skill and knowledge of application methods, so government must arrange technical assistance programs to farmer through extension

Conclusion

Because of their health concerns, the majority of consumers were familiar of organic products. For a long time, the relevance of organic agricultural products was overlooked (Chandrakala and Devi, 2016) [1]. The survey revealed that participants were fully conscious of their image and availability. Only a limited percentage of farmers used bio control products as part of their overall farming strategy, and the majority of them were quite pleased with their results. To be effective in promoting biocontrol products, marketers must devise promotions that are both feasible and morally acceptable in terms of volume and diversity.

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