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Adoption of organic pesticides by the vegetable growers in Manipur of North East India

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Abstract
Global organic farming, as it is practiced today, relies upon microbial processes to degrade, or disintegrate, organic matter to release essential mineral nutrients to plants. The present study was conducted in Bishnupur District of Manipur in year-2019-20 with a total of 50 organic vegetable growers drawn by simple random sampling method. Ex-Post Facto research design was adopted since the variables chosen for the study have already occurred. majority (50.00%) of the vegetable growers adopting Trichoderma in the adoption of organic pesticides for seed treatment followed by the non-adoption category (28.00%), Bhejamrutha (16.00%) and Mycostop (6.00%). In adoption of organic pesticides in nursery total (100.00%) respondents belonged to non-adoption category. In adoption of organic pesticides for insect management majority (36.00%) of the vegetable growers adopting NSKE/Neem oil followed by non-adoption (16.00%) category, Neemastram (22.00%), Brahmastram (14.00%), Agnastram (12.00%). In adoption of organic pesticides for disease management majority (56.00%) of the vegetable growers were belonged to non-adoption category followed by adoption of Trichoderma (14.00%), Neem oil (10.00%), Def-guard (10.00%), Mycostop (6.00%) and Panchagavya (4.00%). In adoption of organic pesticides for storage management total (100.00%) vegetable growers belonged non- adoption category. This specified the significant effectiveness of twelve independent variables in predicting the extent of adoption of organic pesticides among vegetable growers when all the variables were functioning jointly.

Keywords: Extent of adoption, organic pesticide, vegetable growers and management

Introduction
Global organic farming, as it is practiced today, relies upon microbial processes to degrade, or disintegrate, organic matter to release essential mineral nutrients to plants. These essential mineral nutrients released from organic matter in the soil, once absorbed by crops, are combined by photosynthesis with water from the soil and carbon dioxide from the air to enable the plants that fix carbon from the air to grow. Various certifying organizations and the U.S. Department of Agriculture have established criteria for inputs to "organic" farming to produce "organic" food. The USDA National Organic Standards Board (NOSB) in April, 1995, defined organic agriculture as "an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony." The Organic Materials Review Institute (OMRI) approves and lists materials for in organic agriculture and processing in the United States; its two lists are a list of organic products and a list of generic materials acceptable for use in organic production and processing. The present article considers "organic pesticides" as pesticides that are considered useable in organic farming systems such as those described in the NOSB definition of organic agriculture.

Pesticides coupled with other modern inputs undoubtedly have enabled the country to achieve unparalleled increase in agricultural productivity over the last five decades and thus enabled to achieve food security. However, evidences indicate that in India, pests cause crop loss of more than Rs. 6000 crores annually, of which per cent is due to insects and diseases, 33.00 per cent is due to weeds, 10.00 per cent by birds and rodents and the remaining (11.00%) is due to other factors. (Rajendran, 2003). The Indian agriculture is traditionally organic and farmers were following organic cultivation till the middle of the last century (1950). The Green revolution was ushered in India during the sixties and it has been the corner stone of India's agricultural achievement, transforming the country from the stage of food deficiency to self-sufficiency.

Despite vigorous promotion of Green Revolution Technologies, a huge part of Indian agriculture is still predominantly organic, there are many areas and farming communities in India that do not use synthetic chemicals even today and are, thereby, "organic by default". India is the second largest producer of vegetables in the world (ranks next to china) & accounts for about 14.00 per cent of world production of vegetables with the productivity of 17.70 tones/ha which is quite low compared to other countries. As per the final estimates of 2017-18, horticulture production stood at record 311.7 MT, which are 3.70 per cent higher than the previous year and 10.00 per cent higher than the past five years' average production. In present case of vegetables potato, tomato, onion, cabbage and cauliflower account for around 60.00 per cent of the total vegetable production in the country. Vegetables are typically grown in India in field conditions; the concept is opposed to the cultivation of vegetables in green houses as practiced in developed countries for high yields. Keeping in view of these scopes, a study entitled "Adoption of Organic Pesticides by the Vegetable Growers in Manipur of North East India" was undertaken with the objective to socio-personal, socio-economic and psychological characteristics of the vegetable growers and extent of adoption of organic pesticides by the vegetable growers.

Methodology

The present study was conducted in Nambol block of Bishnupur District of Manipur in year-2019-20 with a total of 50 organic vegetable growers drawn by simple random sampling method. *Ex-Post Facto* research design was adopted since the variables chosen for the study have already occurred. Out of the 16 Districts in Manipur; Bishnupur district was selected purposively for the study because in this district organic vegetable growing farmers are more. There are 14 villages in Nambol block, out of those 14 villages, 5 villages (Leimaram mayai leikai, heinoubok, kabowakching, leimapokpam, lourembam) was selected randomly for the study. In each village 10 growers using organic pesticides was selected randomly. The data were collected using structured interview schedule and were then analyzed using appropriate statistical tools viz. frequency, percentage, mean, standard deviation, simple correlation and multiple regression.

Results and Discussion

Table 1: Socio-personal, socio-economic and psychological characteristics of the organic vegetable growers

N=50

Sl. No.	Categories	Organic pesticides adopters	
		Frequency	Percentage
1.	**Age**		
	Young age (up to 36 years)	14	28.00
	Middle age (36 to 56 years)	25	50.00
	Old age (56 years and above)	11	22.00
2.	**Education**		
	Illiterate	7	14.00
	Primary school	3	06.00
	Middle school	2	04.00
	High school	17	34.00
	Pre-university	0	00.00
	Graduate	18	36.00
	Post graduate	3	06.00
3.	**Organic farming experience**		
	Low (<10 years)	12	24.00
	Medium (10-30 years)	23	46.00
	High (>30 years)	15	30.00
4.	**Farm size**		
	Marginal farmers (up to 2.50 acres)	24	48.00
	Small farmers (2.50-5.00 acres)	14	28.00
	Semi-medium farmers (5.00-10.00 acres)	12	24.00
	Medium farmers (10.00-25.00 acres)	0	00.00
	Big farmers (above 25.00 acres)	0	00.00
5.	**Annual income**		
	Low (< Rs. 60,000)	9	18.00
	Medium (Rs. 60,000 to Rs. 1,10,000)	36	72.00
	Rs. 1,10,000 and above	5	10.00
6.	**Input availability**		
	Low (mean – S.D.)	11	22.00
	Medium (mean +- S.D.)	33	66.00
	High (mean + S.D.)	6	12.00
7.	**Cost of cultivation**		
	Low (mean – S.D.)	8	16.00
	Medium (mean +- S.D.)	38	76.00
	High (mean + S.D.)	4	08.00
8.	**Extension contact**		
	Low (mean – S.D.)	4	08.00
	Medium (mean +- S.D.)	34	68.00
	High (mean + S.D.)	12	24.00

9.	**Training undergone**		
	Low (mean – S.D.)	12	24.00
	Medium (mean + -S.D.)	25	50.00
	High (mean + S.D.)	13	26.00
10.	**Mass media exposure**		
	Low (mean - S.D.)	15	30.00
	Medium (mean +- S.D.)	24	48.00
	High (mean + S.D.)	11	22.00
11.	**Market accessibility**		
	Low (mean - S.D.)	20	40.00
	Medium (mean +- S.D.)	23	46.00
	High (mean + S.D.)	7	14.00
12.	**Risk taking ability**		
	Low (mean - S.D.)	9	18.00
	Medium (mean +- S.D.)	31	62.00
	High (mean + S.D.)	10	20.00

It was observed that in organic pesticides adopting farmers, majority (50.00%) of the farmers were belongs to middle age followed by young (28.00%) and old (22.00%). This observation was in line with the findings of Ramu (2005) and Dadarao (2013). It was found that organic pesticides adopting farmers majority of the farmers were educated up to graduation level (36.00%) followed by high school (34.00%), illiterate (14.00%), post-graduation and primary school with same (6.00%) proportion, middle school (4.00%), and pre-university course (0%).

The results indicate that majority of the organic pesticides adopting vegetable growers had medium farming experience (46.00%) followed by high (30.00%) and low farming experience (24.00%). It could be concluded that majority of organic pesticides adopting vegetable growers had medium farming experience. Majority (48.00%) of the organic pesticides adopting farmers considered as marginal vegetable growers with higher proportion of respondents followed by small (28.00%) and semi medium farmers (24.00%) with small proportion and none in medium and big vegetable growers.

It was observed that in organic pesticides adopting vegetable growers, majority (72.00%) of the farmers were belonged to medium income group of Rs. 60,000 to Rs. 1, 10,000 followed by low-income group (18.00%) of below Rs. 60,000 and high- income group (10.00%) of Rs. 1, 10,000 and above. Majority (66.00%) of the organic pesticides adopters had medium level of input availability followed by low (22.00%) input availability and high (12.00%) input availability. This is in line with the findings of Vasantha (2002) and Nirmala (2012). Majority (76.00%) of the farmers were incurred with medium cost of cultivation followed by low (16.00%) and high (8.00%) cost of cultivation. Results from table-1 indicates that in organic pesticides adopting farmers majority (68.00%) of the respondents are belonged to medium category of extension contact followed by high (24.00%) and low (8.00%) category of extension contact. It was revealed that majority (50.00%) of the organic pesticides adopting farmers received medium level of training followed by high (26.00%) and low (24.00%) level of training.

Table-1 showed that majority (48.00%) of the respondents in organic pesticides adopters had medium level of mass medium exposure followed by low (30.00%) and high (22.00%) level of mass media exposure. This is in line with the findings of Sajith (2004). Majority (46.00%) of the organic pesticides adopting farmers received medium level of market accessibility followed by low (40.00%) and high (14.00%) market accessibility. It was found that majority (62.00%) of the organic pesticides adopting farmers had medium risk-taking ability followed by high (20.00%) and low (18.00%) risk taking ability.

Extent of adoption of organic pesticides by the vegetable growers

To have a clear picture of the extent of adoption of organic pesticides by the vegetable growers the practice wise distribution of respondents was done and presented in table -2 The vegetable growers indicated as of which of the selected five level of adoption of organic pesticides in vegetable production i.e., adoption of organic pesticides in seed treatment, in nursery, in insect management, in disease management, and in storage pest management on the basis of non-adoption and adoption response. Thus, with the scores obtained by the individuals, the extent of adoption of organic pesticides was determined.

Table 2: Distribution of vegetable growers based on practice-wise adoption of organic pesticides

N=50

Sl. No.	Classification of Various aspect (item)	Extent of Adoption of organic pesticides	Frequency (f)	Percentage (%)
1.	Adoption of organic pesticides in Seed treatment	Non-adoption	14	28.00
		Trichoderma	25	50.00
		Bheejamruth	8	16.00
		Mycostop	3	6.00
2.	Adoption of organic pesticides Nursery	Non-adoption	50	100.00
3.	Adoption of organic pesticides Insect management	Non-adoption	8	16.00
		NSKE/Neem oil	18	36.00
		Neemastram	11	22.00
		Brahmastram	7	14.00
		Agnastram	6	12.00
4.	Adoption of organic pesticides	Non-adoption	28	56.00

	Disease management	Trichoderma	7	14.00
		Neem oil	5	10.00
		Def-guard	5	10.00
		Mycostop	3	6.00
		Panchagavya	2	4.00
5.	Adoption of organic pesticides Storage management	Non-adoption	50	100.00

It is evident from the table-2 that majority (50.00%) of the vegetable growers adopting Trichoderma in the adoption of organic pesticides for seed treatment followed by the non-adoption category (28.00%), Bhejamrutha (16.00%) and Mycostop (6.00%). In adoption of organic pesticides in nursery total (100.00%) respondents belonged to non-adoption category. In adoption of organic pesticides for insect management majority (36.00%) of the vegetable growers adopting NSKE/Neem oil followed by non-adoption (16.00%) category, Neemastram (22.00%), Brahmastram (14.00%), Agnastram (12.00%). In adoption of organic pesticides for disease management majority (56.00%) of the vegetable growers were belonged to non-adoption category followed by adoption of Trichoderma (14.00%), Neem oil (10.00%), Def-guard (10.00%), Mycostop (6.00%) and Panchagavya (4.00%). In adoption of organic pesticides for storage management total (100.00%) vegetable growers belonged non-adoption category.

Table 3: Distribution of respondents based on their extent of adoption of organic pesticides (overall)

N=50

Sl. No.	Category	Frequency (f)	Percentage (%)
1.	Low	13	26.00
2.	Medium	24	48.00
3.	High	13	26.00
	Total	**50**	**100.00**

Mean = 7 S.D. = 0.728

It was observed that the majority (48.00%) of the vegetable growers belonged to medium level of adoption category followed by the low and high level of adoption category with same (26.00%) proportion.

Table 4: Correlation coefficient on the extent of adoption of organic pesticides among vegetable growers with the independent variables

Sl. No.	Independent Variables	Correlation co-efficient 'r' value
1.	Age (X_1)	0.066 (NS)
2.	Education (X_2)	0.420**
3.	Farming experience (X_3)	0.425**
4.	Farm size (X_4)	0.429**
5.	Annual income (X_5)	0.712**
6.	Input availability (X_6)	0.316*
7.	Cost of cultivation (X_7)	-0.335*
8.	Extension contact (X_8)	0.249 (NS)
9.	Training undergone (X_9)	0.329*
10.	Mass media exposure (X_{10})	0.399**
11.	Market accessibility (X_{11})	0.215(NS)
12.	Risk taking ability (X_{12})	0.312*

*Significant at 0.05 level of probability.
**Significant at 0.01 levels of probability and NS: Non-Significant.

Table 3 Education, Farming experience, Farm size, Annual income, Input availability, Training undergone, Mass media exposure and Risk-taking ability were found to be positively and significantly related to the extent of adoption of organic pesticides among vegetable growers at 0.01 and 0.05 level of probability. Cost of cultivation were found to be negatively and significantly related to the extent of adoption of organic pesticides among vegetable growers at 0.05 level of probability. Age, Extension contact and Market accessibility were not significantly related with the extent of adoption of organic pesticides among vegetable growers.

Table 5: Regression coefficient on the extent of adoption of organic pesticides among vegetable growers with selected independent variables

Sl. No.	Independent variables	Beta	B	Standard error (S.E.)	t-value of b
1	Age	-0.013	0.000	0.005	-0.164
2	Education	0.244	0.095	0.036	2.671*
3	Farming experience	0.224	0.016	0.006	2.747**
4	Farm size	0.317	0.109	0.030	3.650**
5	Annual income	0.419	0.000	0.000	4.543**
6	Input availability	0.130	0.071	0.052	1.370
7	Cost of cultivation	-0.051	-0.000	0.000	-0.551
8	Extension contact	0.000	0.000	0.022	0.004
9	Training undergone	0.189	0.095	0.044	2.177*
10	Mass media exposure	0.271	0.030	0.009	3.177**
11	Market accessibility	-0.090	-0.056	0.051	-1.094
12	Risk taking ability	-0.041	-0.012	0.026	-0.471

*Significant at 0.05 level of probability R^2=0.827.
**Significant at 0.01 level of probability F=14.776.

From the findings of the regression analysis for organic pesticides adopting vegetable growers from table-4 it could be observed that out of the twelve independent variables fitted, only six variables namely Education, Farming experience, Farm size, Annual income, Training undergone and Mass media exposure contributed positively and significantly to the prediction on extent of adoption of organic pesticides among vegetable growers and they may be entitled as good predictors of extent of adoption of organic pesticides. Education and Training undergone were significant at the 0.05 level to the prediction whereas, Farming experience, Farm size, Annual income and Mass media exposure were significant at the 0.01 level to the prediction on the extent of adoption of organic pesticides among vegetable growers. The R^2 value is 0.827 indicated that all the twelve independent variables jointly contributed (82.70%) towards the variations on the extent of

adoption of organic pesticides among vegetable growers. The F-value being 14.776 was also found significant at 0.01 level of probability. This specified the significant effectiveness of twelve independent variables in predicting the extent of adoption of organic pesticides among vegetable growers when all the variables were functioning jointly.

Conclusion

It can be concluded that organic pesticides adopting vegetable grower's majority of them belong to the medium extent of adoption. Education, Farming experience, Farm size, Annual income, Input availability and Risk-taking ability were the important factors which have contributed to the overall extent of adoption of organic pesticides among vegetable growers in the Bishnupur district of Manipur. Adoption of organic pesticides in vegetables and others crops helps in maintaining health at the same time soil fertility also, so in Manipur farmers are using organic pesticides till date. Effective adoption of both organic and pesticides even though a complex process with proper planning, finance, and efficient human resources we can make it happen for sustainable agriculture. To keep pace with the developing other sectors all over the country, agriculture needs to re-define and re-evaluate their roles more consistently and systematically.

References

1. Dadarao ON. Adoption of Improved Cultivation Practices of Turmeric by the Farmers. Doctoral dissertation, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, 2013.
2. Nirmala. A Study on Diffusion Status and Adoption of System of Rice Intensification (SRI) in Mahaboobnagar in Andhra Pradesh. M.Sc. Thesis. Acharya N.G. Ranga Agricultural University, Hyderabad, 2012.
3. Noorjehan AK. Organic farming in Tamil Nadu-A multi-dimensional Analysis. Ph.D. Thesis. Tamil Nadu Agricultural University, Coimbatore, India, 2004.
4. Nwachukwu CA. Adoption of Organic Agricultural Technologies: Implications for Radio farmer Agricultural Extension Programmers in Imo State, Nigeria. In Scientific and Technical Information and Rural Development IAALD XIIIth World Congress, Montpellier, 2010, 26-29.
5. Rajendran P. Plant Insecticidal Proteins and their Potential for Developing Transgenics Resistant to Insect Pests. Indian journal of biotechnology. 2003;2:110-120.
6. Ramavatar and Dinesh. Need and opportunities of organic farming in India. Intensive Agriculture. 2004;42(5-6):28-30.
7. Ramu AG. Knowledge and adoption of turmeric farmers in Kadapa district of Andhra Pradesh. Doctoral dissertation, Acharya N.G. Ranga Agricultural University, Rajendranagar, Hyderabad, 2005.
8. Vasantha R. Critical analysis of Integrated Pest Management practices (IPM) in relation to innovation-decision process among cotton growing farmers of Guntur district of Andhra Pradesh. Ph.D. Thesis. Acharya N.G. Ranga Agricultural University, Hyderabad, 2002.