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Usefulness of sustainable organic farming technologies as perceived by the farmers

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Abstract
Sustainable organic agricultural systems have been characterized as those that can meet demands for food and fiber at socially acceptable economic and environmental costs Despite the diversity in conceptualizing sustainable organic agriculture, there is a consensus on three basic dimensions of the concept, namely, ecological soundness economically viable and socially acceptable. Farmers' decisions to adopt a new agricultural technology depend on complex factors. Among these factors farmers' perception is considered has been considered as an important factor. Keeping this in view the present study was an attempt to investigate perceptions of trained farmers about sustainable organic agricultural technologies and to identify factors influencing their perceptions. The study revealed that suitable improved crop varieties was perceived by the trained farmers as most favourable technology. The respondents' views about the technologies viz. use of FYM, NADEP and vermi compost, management of crop residues and wastes on farm, seed treatment, cultivation of legumes and application of bio fertilizers were also found to be favourable. The study highlights to create technological awareness among the farmers in order to convince the farmers with the important organic farming practices. The trials, demonstration and other skill oriented prgramme should give more emphasis on technological practices of organic farming. The study exhibits significant impact of sustainable organic farming training programmes on changing the perception of the respondents about sustainable organic farming technologies in desired direction. It can be also concluded that the certain attributes of the farmers like education, social participation, economic motivation, annual income, source of information, contact with extension personnel, innovativeness, and risk orientation were found to hold positive and strong relationship with their perception about sustainable organic farming practices. Hence the study suggests that these factors should be given due consideration in designing and implementing any sustainable organic farming programmes for the farmers.

Keywords: Perception, sustainable organic farming, trained farmers

Introduction
In India tremendous advances have occurred in the food production during the last four decades due to green revolution. However, Indian agriculture is facing serious problems and challenges due to its ever-increasing population, limited land and water availability, and degradation of natural resources. In the present scenario It has been felt essential to increase agricultural productivity in a sustainable manner. The excessive use of agro-chemicals over past decades has deteriorated soil health which resulted into to declines of crop yields and produce quality coupled with ecological problems. Sustainable Organic farming is a system involving the use of organic sources for crop nutrition, biological sources for pest and disease management, recycling of farm and animal wastes in order to increase as well as sustain productivity, and could be the most appropriate development path for Indian agriculture. According to Rao (2000) sustainable organic farming is an agriculture production system that sustains the demands of production without interrupting the natural eco-system and with little or no dependence on chemical fertilizers and other agricultural chemicals through the increased use of organic matter, bio-fertilizers, reduced tillage, integrated pest management and the adoption of integrated and sustainable organic farming systems.
India has traditionally practiced organic agriculture, but the process of modernization, particularly the green revolution technologies, has led to the increased use of chemicals. Negative effects of chemical on the environment are manifested through soil erosion, water shortages, soil contamination, genetic erosion, etc. In view of these problems there has been a

resurgence of interest in organic agriculture

It is estimated that the Indian population will grow about 1.4 billion in 2025 requiring 380 MT of food on available land of 146 million ha. (Yadav *et al.* 2000) [15]. In order to maintain sustainability in agricultural productivity emphasis should be on reduced chemical use, viewing of world as a global village, respect for nature, family and group self-reliance (D'Souze 1998) [3]. It integrates three goals mainly environmental health, economic profitability, social and economic equity (Malkina-pykh and Pykh 2003) [9]. Realizing the necessity of organic farming the Government of India has also launched the National Programme for Organic Production (NPOP) in the year 2001. The major goal of this programme is to achieve sustainable production of quality food with little or no effect on the environment. Madhya Pradesh accounts for nearly 40% of India's total organic cultivation area. The Madhya Pradesh government has declared its intentions of promoting organic farming in a big way, creating awareness about soil nourishment without using chemicals, simplifying of certificate process and providing marketing platform is the key for successful implementation of organic farming in M.P. The popularization and adaptation of organic farming cultivation greatly depend on the perception of the farmers towards it.

There is need to study the role of the farmers in management of sustainable agriculture, adoption of new technologies and assessment of training programme on sustainable organic farming technologies which will be helpful in improving agricultural productivity and maintaining the sustainability in the farming system. Keeping this in view the present study was conducted with the objectives of analyzing the perception of the farmers about sustainable organic agricultural practices and identifying factors influencing their perceptions.

Review of Literature

Herath and Wijekoon (2013) [4] showed that non-organic growers did not have strong motivation to practice organic farming as they were of the view that yields are low, even though organic coconuts have a slightly higher price. Furthermore, they were reluctant to shift from chemical fertilizers and pesticides as they have been using them for a long period of time. Conversely, organic growers practice organic farming mainly because of the marketing assistance and inputs such as organic fertilizer and technical knowledge provided by the Serandipol Company, and also their favorable attitudes towards the environment. Knowledge about organic farming and extension worker contacts greatly influence motivation towards adopting organic farming. Therefore, participatory extension programs and better extension approaches such as farmer field schools could be used to change the attitude, knowledge and skills of growers towards organic farming.

Moundal *et al.* (2014) [7] showed that the knowledge levels of the respondents were low (55%) and medium (45%) with no high level respondents at all. The respondents' answers on organic farming, especially pertaining to use of organic insecticides, herbicides and fertilizers, showed there is still some need for improvement: their attitude was not satisfactory in obtaining organic materials, there were difficulties in implementation, they considered there were less befits in it for them and they were still dependent on conventional practices, especially for pest and disease control.

Arif Ullah *et al.* (2015) [14] found that factors affecting adoption of organic farming have a significant effect on the farmer productivity. Moreover, cost, productivity, profitability, compatibility and efficiency have a positive and significant effect. Thus, it is obvious that adopting organic farming not only to increase the farmer income but also to protect environmental pollution by avoiding the toxic chemical and fertilizer. Finally, we suggest that government agencies, extension and research institution should play a vital role to strengthen the awareness and advantages of organic farming.

Patidar and Patidar (2015) [11] revealed that 67% of respondents have positive perception towards organic farming. Respondents' perception towards organic farming had significant relationships ($p \leq 0.05$) with respondents' age, educational background, farm size, benefits, social aspects and perception of organic farming.

Prihtanti (2016) [12] found that conventional paddy farmers motivation did not adopt organic farming because of yields uncertainty (46.67%), complicated production system (20%), did not familiar to cultivate organic farming (10%), conventional cultivation has been hereditary (10%), did not know how to sale the organic product to reach higher price (6.67%), as well as long growth period of plants and the productivity of organic farming was not different with conventional farming (respectively 3.33%).

Samantaray (2016) [13] found that only 7.50 per cent of the respondents had high knowledge in organic farming before participation in training and after the participation in training this figure increased up to the 26.67 per cent. All the selected attributes of the trained farmers namely education, namely education, size of land holding, social participation, annual income, source of information, contact with extension personnel, innovativeness, cosmopoliteness & knowledge about organic farming were found to have significant association with dependent variable-knowledge of trained farmers about organic farming

Khoy *et al.* (2017) [5] indicated that most of the farmers were only aware that organic rice production would yield higher market prices for their produce, along with an improved standard of health and environment. They infrequently remarked about other benefits, such as soil improvement and cost reduction. Farmers perceive that labor-intensive production and lack of organic fertilizers are the main challenges in organic farming. Moreover, farmers distinguished the opportunities and challenges differently according to their characteristics. Hence, securing better yields and a market for organic rice production through long term contracting and improved farming techniques are key factors for promoting organic farming.

Marsh *et al.* (2017) [6] found that most of the respondents were farmers; fewer than 30 % grew both organic and inorganic crops, and less than 10 % grew only organic crops. Organic commodities produced were fruits, vegetables, herbs, and animals. At least 60 % of the farmers had some knowledge about production costs, marketing, and farming practices for organic crops, while nearly 50 % did not know about the practices for growing certified organic. Lack of time and the length of time to certify for organic farming were the two most cited reasons for farmers not growing organic. and non-farmers believed that organic crops are safe, high quality, and high cost. This survey indicates a need to provide some farmers and non-farmers with more information on how to become active in organic production in this region and suggests a continued need for policies to make organic production more amenable to adoption by producers.

Mugivhisa (2017) [8] indicated that the majority of respondents (80%) had previous knowledge of organic farming but had

failed to practices it because they could not afford it, However, they showed a willingness to adopt organic farming.

Materials and methods

The present study was carried out in Rewa district of M.P. Rewa district has nine blocks namely Rewa, Raipur Karchuliyan, Sirmour, Teonthar, Jawa, Gangeo, Mauganj, Hanumana and Naigarhi. Rewa block of Rewa district was selected purposively because maximum number of organic farming training programmes have been conducted in this block out of all the blocks by State Department of Agriculture and Krishi Vigyan Kendra Rewa for dissemination of sustainable organic farming practices to the farming community. Five villages having higher concentration of farmers trained under organic farming programme were selected. A village wise list of farmers was prepared. The selection of farmers was done through proportionate random sampling method to make a sample size of 150 respondents.

Descriptive survey design for data collection was adopted in the present study. A pre tested interview schedule including fixed-response and open- ended questions designed in consultation with experts of organic farming was the main instrument for data collection. To validate the instrument, the content validity was used. The instrument was validated by a team of experts consisting of scientists of College of Agriculture and Krishi Vigyan Kendra Rewa (M.P.), officers of State Department of Agriculture and two experienced progressive farmers of the region. Prior to this study, a pilot study was also conducted. The aim of the pilot study was to test and modify the instrument as needed. Having tested the questionnaire for validity and reliability it was filled out by researcher and then the collected data were analyzed. Farmers' perceptions towards sustainable organic agricultural technologies were operationalized as the extent of their agreement with the statements related to selected technologies of sustainable organic farming. The selected technologies of sustainable organic farming included in the study were as suitable improved crop varieties, use of FYM, NADEP and vermi compost, management of green manures, application of bio fertilizer, management of crop residues and wastes on farm, minimum tillage, crop rotation, diversified farming, cultivation of legumes, agronomic control of pests., biological control of pests, management of ITKs, use of cow dung and cow urine based products. The perceptions of farmers towards selected sustainable organic agricultural practices were measured by some positive and negative statements.

The respondents were asked to indicate the extent of their agreement on each technology. A three points continuum scale was used consisting five responses against each statement namely high perception, medium perception and low perception with assigned scores of 3, 2 and 1, respectively. Data were collected by personal interviewing with the respondents. The collected data were analyzed with help of suitable statistical tools like per cent, mean and correlation coefficient.

Results and discussion

1. Perceptions of the trained farmers about sustainable organic agricultural technologies

Table 1 depicts the respondents' perceptions towards each selected sustainable organic agricultural technologies.

Table 1: Percent distribution of the respondents according to their perception towards sustainable organic agricultural technologies (n=150)

S.N.	Sustainable organic agricultural technologies	Extent of perception			Total score	Mean	Rank
		High	Medium	Low			
1	Use of FYM,NADEP and vermin compost	82	46	22	360	2.41	II
2	Management of green manures	22	62	66	256	1.70	XI
3	Suitable improved crop varieties	87	48	15	372	2.48	I
4	Application of bio fertilizers	44	74	32	312	2.08	VI
5	Management of crop residues and wastes on farm	74	47	29	345	2.30	III
6	Minimum tillage	23	38	89	234	1.56	XIII
7	Crop rotation	36	76	38	298	1.98	VII
8	Diversified farming	32	66	52	280	1.86	IX
9	Cultivation of legumes	48	70	32	316	2.10	V
10	Agronomic control of pests	32	59	59	273	1.82	X
11	Biological control of pests	18	44	88	230	1.53	XIV
12	Management of ITKs	37	59	54	283	1.89	VIII
13	Use of cow dung and cow urine based products	30	43	77	253	1.69	XII
14	Seed treatment	73	47	30	343	2.29	IV

Table 1 exhibits that suitable improved crop varieties was perceived as most favourable technology as majority of the respondents i.e.87 had high perception towards it, 48 respondents had medium perception and only 15 respondents were having low perception about suitable improved crop varieties, Similarly the respondents also viewed that use of FYM, NADEP and vermi compost, management of crop residues and wastes on farm, seed treatment, cultivation of legumes and application of bio fertilizers are useful sustainable organic farming practices as these practices ranked II, III,IV,V and VI respectively. Mean score of the technology i.e. biological control of pests showed that the respondents had poorest perceptions towards it amongst all the technologies. The respondents also exhibited low perception towards minimum tillage, use of cow dung and cow urine based products, management of green manures and agronomic control of pests. Samantaray (2016) [13] and Mugivhisa (2017) [8] found the similar trends in their study.

2 Assessment of sustainable organic farming training programmes in terms of respondent' perception about sustainable organic farming technologies

Table 2: Distribution of respondents according to their overall perception about sustainable organic farming technologies

S.N.	Extent of perception	Respondents (n=150)	
		Before training	After training
1	Low	89	34
2	Medium	42	98
3	High	19	18

The data presented in Table 2 revealed that before participation in such training programmes, majority of the respondents (59.33%) showed low perception about sustainable organic farming technologies followed by 28 percent respondents exhibited medium perception and only 12.67 respondents were having high perception towards organic farming technologies. It is evident from Table that after receiving the organic farming training higher percentage of the respondents i.e.65.33 % indicated medium perception, 22.67 % high perception and only 12 % respondents were found to be in the category of low perception about sustainable organic farming, This confirms the substantial impact of sustainable organic farming training programmes on changing the perception of the respondents about sustainable organic farming technologies in desired direction. This finding supports the view expressed by Borkar *et al.* (2000) [2] Badodiya *et al.* (2009) [1], Yaday (2014) [16] and Samantaray (2016) [13].

3. Relationship between attributes of the trained farmers and their perception about sustainable organic farming practices:

Table 3: Correlation between attributes of trained farmers and their perception about sustainable organic farming

S. No.	Attributes	Correlation coefficient	Rank
1	Age	0.043 NS	(X1)
2	Education	0.413**	(X2)
3	Caste	0.033NS	(X3)
4	Size of family	0.020NS	(X4)
5	Social participation	0.35**	(X5)
6	Size of land	0. 27*	(X6)
	holding		
7	Economic motivation	0.39**	(X7)
8	Annual income	0. 371*	(X8)
9	Source of	0.362**	(X9)
	information		
10	Contact with	0.367**	(X10)
	extension		
	personnel		
11	Innovativeness	0.394**	(X11)
12	Cosmopoliteness	0. 223*	(X12)
13	Risk orientation	0.437**	(X13)

* Significant at 1 % level of probability.** Significant at 5 % level of probability, NS = non significant

With a view to identify the factors influencing perception about sustainable organic farming practices, relationship between attributes of the trained farmers and their perception about sustainable organic farming practices has also been find out in the present study. The zero order correlation coefficient of attributes of trained farmers with their perception about organic farming practices has been furnished in Table 3. It can be observed from the table that correlation coefficients in respect of education (0.413), social participation (0.35), economic motivation (0.39), annual income (0.371), source of information (0.362), contact with extension personnel (0.367), innovativeness (0.394), and risk orientation (0.437) exhibited positive and significant relationship with perception of trained farmers about sustainable organic farming practices at 1% level of probability, whereas size of land holding (0.27) and cosmopoliteness (0.223) had also significant relationship with perception of trained farmers about organic farming practice at 5% probability level, On the contrary, age, caste and size of family were found to be non-significantly related with perception of the trained farmers about sustainable organic farming practices. The findings of Patidar & Patidar (2015) [11] and Samantaray (2016) [13] are in line with the present findings.

Conclusion

The study revealed that suitable improved crop varieties was perceived by the trained farmers as most favourable technology. The respondents' views about the technologies viz. use of FYM, NADEP and vermi compost, management of crop residues and wastes on farm, seed treatment, cultivation of legumes and application of bio fertilizers were also found to be favourable. The perceptions of trained farmers seemed to be not in positive direction regarding the technological aspects namely biological control of pests minimum tillage, use of cow dung and cow urine based products, management of green manures and agronomic control of pests. The study highlights to create technological awareness among the farmers in order to convince the farmers with these important organic farming practices. The trials, demonstration and other skill oriented prgramme should give more emphasis on these technological practices. The study exhibits significant impact of sustainable organic farming training programmes on changing the perception of the respondents about sustainable organic farming technologies in desired direction. It can be also concluded that the certain attributes of the farmers like education, social participation, economic motivation, annual income, source of information, contact with extension personnel, innovativeness, and risk orientation were found to hold positive and strong relationship with their perception about sustainable organic farming practices. Hence the study suggests that these factors should be given due consideration in designing and implementing any sustainable organic farming programmes for the farmers.

References

1. Badodiya SK, Daipuria OP, Jaulkar MA, Dhakad U. Management of eco-friendly practices by winter vegetable growers. National Seminar on Organic Farming, RVSKVV, Gwalior, 2009.
2. Borkar MM, Chothe GD, Lanjewar AD. Characteristics of farmers influencing their knowledge about use of bio-fertilizers. Mah. J Ext. Edu. 2000; 19:59-63.
3. D'Souza GE, Gebremedhin TG. Sustainability in agricultural and rural development (Aldershot UK and Brookfield VT Eds), USA Ashgate Publishing Co, 1998, 245.
4. Herath Chaminda S, Wijekoon Rusitha. Study on attitudes and perceptions of organic and non-organic coconut growers towards organic coconut farming IDESIA (Chile) Mayo-Agosto, 2013; 31:Nº2 5-14.

5. Khoy Rada, Teruaki Nanseki, Yosuke Chomei. Farmers' Perceptions of Organic Rice Farming in Cambodia. International Journal of Humanities and Social Science. 2017; 7(4):92-98.
6. Marsh Lurline, Virginie Zoumenou, Xzen. Organic farming: knowledge, practices, and views of limited resource farmers and non-farmers on the Delmarva Peninsula, Org. Agr., 2017; 7:125-132.
7. Mondal Shimul, Theerachai Haitook, Simaraks Suchint. Farmers' Knowledge, Attitude and Practice toward Organic Vegetables Cultivation in Northeast Thailand, Kasetsart J (Soc. Sci) 2014; 35:158-166.
8. Mugivhisa P. Farmers' adoption of Organic material in agricultural practices. International Journal of Social Science. 2017; 4(3):92-98.
9. Malkina-pykh IG, Pykh YA. Sustainable food and agriculture. WIT Press, Southampton, Boston, 2003.
10. Nandapurkar GG. A study their entrepreneurial behavior of small farmers in Marathkanda Agricultural University, Parbhani (Maharashtra) India. 1982; 17(4):241-256.
11. Patidar Suresh, Patidar Himanshu. A Study of Perception of Farmers towards Organic Farming. International Journal of Application or Innovation in Engineering & Management (IJAIEM). 2015; 4(3):269-277.
12. Prihtanti Tinjung Mary. Farmer group as social determinant of farmer's perceptions on organic farming concepts and practice. RA Journal of Applied Research. 2016; 2(02):407-415.
13. Samantaray, Santosh Kumar. Impact of training programmes on knowledge & adoption of organic farming practices Global Journal of Science Frontier Research on Agriculture and Veterinary. 2016; 16:35-38.
14. Ullah A, asif CV, Bisar. Factor affecting adoption of organic farming. Agricultural Sciences. 2015; 2(3):120-124.
15. Yadav RC, Dwivedi BS, Pandey PS. Rice crossing system assessment of sustainability under green manuring and chemical fertilizer inputs. Field Crops Abstracts. 2000; 65:15-30.
16. Yadav VP, Singh VK, Yadav Y, Tyagi MS. Impact of training programme on knowledge and adoption of tomato crop technologies. Plant Archives. 2014; 14(1):297-299.