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Research Note

Ecological, Economical and Social Sustainability of Organic Farming

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ABSTRACT

The study was conducted in Bengaluru rural and Chikkballapur district of southern Karnataka to assess the sustainability of organic farming. Data were collected from 120 organic farmers. *Ex post facto* research design was employed for the study. More than 47 per cent of the respondents opined that organic farming was highly sustainable. With respect to ecological sustainability of organic farming, 47.50 per cent of respondents observed that organic farming was highly sustainable whereas economical sustainability of organic farming was stated by 52.50 per cent of respondents. More than 47 per cent of organic farmers considered organic farming socially sustainable.

Keywords: Ecological sustainability, Economical sustainability, Organic farming, Social sustainability

INTRODUCTION

Rapid changes in economic, technical and demographic conditions have brought in increasingly more number of small holder farming systems in to focus. The need based research and field extension work have focused on modern agriculture with higher use of external inputs, like agro-chemicals, hybrid seeds, fuel based mechanization, etc. The primary aim of their efforts has been to increase the yields of targeted crops. In the process of attaining higher levels of food production to keep pace with population growth during the past four decades, emphasis was laid on intensive agricultural practices. Though, India has become self-sufficient in food production, it has resulted in serious environmental degradation and health hazards to mankind, animals and the biodiversity. This has also sometimes resulted in lower returns to the farmers due to a glut in the market. It is emphasized that technologies generated over the past four decades were not in tune with the natural resource base and environment in different parts of globe. The gravity of environmental degradation has motivated scientists and planners towards finding out eco-friendly, economically feasible and sustainable farming systems for different agro-climatic conditions, emphasizing the needs of present and future generations. Hence organic farming was found to be the real time solution to combat the above mentioned problems. Organic agriculture is a holistic production management system which promote the health of agro-ecosystem including biodiversity, biological cycles and soil biological activities. Researches show that organic production system have its impacts in all aspects of the cultivation including the nature and mind set of people, who were considering farming as their life supporting and income source. It allowed the adoption of traditional and indigenous knowledge like farmer selection varieties and management practices and incorporation of biological principles and resources for intensification of production. By adopting organic cultivation, farmers are challenged to take on new knowledge and perspective and to innovate (Gills *et al.,* 2013). This is achieved by employing agronomical, biological and mechanical methods without using synthetic materials. There is huge discussion about whether organic farming is sustainable or not, whether it

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should be promoted or otherwise, and what is the opinion of the farmers about sustainability of organic farming? With this brief background it was felt necessary to carry out the research study to assess the sustainability of organic farming.

METHODOLOGY

The research was carried out in Bengaluru rural and Chickballapur district of Karnataka state. Bengaluru urban comprises four taluks *viz;* Devanahalli, Doddaballapur, Hosakote and Nelamangala. Chickballapur district include six taluks *viz.*, Gouribidanur, Bagepalli, Gudibanda, Chickballapur, Sidlaghatta and Chintamani. Four organic farmers' associations were selected from each district and from each association, fifteen organic farmers were selected. Thus from both districts, 120 organic farmers were selected as sample for the study. *Ex-post-facto* research design was employed for the study. To measure the sustainability of organic farming, tool was developed and standardized consisting of 34 items. The response was collected on a five point continuum *viz;* strongly agree, agree, undecided, disagree and strongly disagree with assigned score of 5, 4, 3, 2, and 1, respectively for positive statements and reverse scoring for negative statements. Data were collected through personal interview method and data collected was analyzed using appropriate statistical tools like frequency, percentage, mean and standard deviation.

RESULTS AND DISCUSSION

It is observed from Table 1 that three components were identified to assess the sustainability of organic farming. Under each component, items were developed. Ecological sustainability component consisted of 20 items whereas seven items each were under economic and social sustainability components.

Item wise Sustainability of organic farming practices

Five items that got highest mean score were organic farming improves flora and fauna (1st rank), organic farming protects and recharges farm resources in your field (2nd rank), organic farming increases biodiversity (3rd rank), organic farming leads to resurgence of pest and diseases (negative statement) (4th rank) and indigenous knowledge is recognized (5th rank). Incidentally among these items, first, second, third and fourth items belonged to ecological sustainability component and fifth item belonged to social sustainability component. It may be due to high level of farming experience, mass media exposure extension participation, innovativeness and social participation. These characteristics play a very important role in development of individual personality and defining cognitive demand of individual (Chahal *et al.*, 2014). Further the above characteristics improve the cognitive and affective domain of the organic farmers leading to adoption of organic farming practices which in turn leads to sustainability of organic farming. Five items that got least mean score were organic farming improves soil productivity (34th rank), organic farming reduces water pollution (33th rank), it conserves and preserves environment (32nd rank), it enables availability of high quality food at reasonable price (31st rank) and it leads to healthy atmosphere (30th rank). Among above items, first, second and third item belonged to ecological sustainability component, fourth item is related to economical sustainability component and fifth item belonged to social sustainability component.

The above results remind the concept of direct and indirect consequences of innovation (Rogers, 1983). Some consequences of organic farming are direct and some are indirect. Most of the organic farmers have observed and realized the direct benefits of organic farming but failed to realize the indirect benefits of organic farming like role played by organic farming in improving soil productivity by increasing the soil microbial activity, reducing water pollution by eliminating the usage of chemical fertilizers which on usage leads to water pollution, conserves and preserve environment by usage of eco-friendly technologies in agriculture. The above reasons can be attributed to the above trend of findings. With respect to ecological sustainability, the items that were agreed by most of the respondents were that organic farming improves flora and fauna (1st rank), organic farming protects and recharges farm resources in the field (2nd rank), organic farming increases biodiversity (3rd rank). The items that got least score are organic farming improve soil productivity (20th rank), organic

Table 1: Item wise sustainability of organic farming

S.No.	Statements	Mean	Rank under each component	Overall rank
Ecological Sustainability				
1	Organic farming protects and recharges farm resources in your field	4.3	2	2
2	Organic farming increases biodiversity	4.24	3	3
3	Organic farming have negative impact on environment	3.89	12	15
4	It leads to chemical free environment	4.05	6	7
5	It reduces Soil erosion	3.7	17	24
6	Sustains soil fertility through organic cycling	3.97	8	11
7	It maintains balance in eco system	3.90	11	14
8	It leads to resurgence of pest and diseases	4.19	4	4
9	It is eco friendly	3.97	8	11
10	Improves flora and fauna	4.42	1	1
11	Organic farming conserves natural resources	3.84	14	19
12	Organic farming promotes soil microbial activity	3.97	8	11
13	Conserves natural enemies	3.74	16	23
14	Due to usage of organic matter it improves soil porosity	3.88	13	16
15	Organic farming reduces water holding capacity of soil	4.06	5	6
16	Organic farming improves organic content in the soil	3.98	7	10
17	Organic farming improves water use efficiency	3.78	15	21
18	Organic farming reduces water pollution	3.12	19	33
19	It improves soil productivity	2.87	20	34
20	It conserves and preserves environment	3.32	18	32
Economical Sustainability				
1	Reduces cost of production	3.61	6	29
2	It enables availability of high quality food at reasonable price	3.50	7	31
3	Help farmer to become self-sufficient with minimal risk in long run	4.05	1	7
4	There is huge demand for organic products	3.67	4	25
5	Organic products fetches better prices to farmers	3.85	2	18
6	Organic farming leads to optimum utilization of resources	3.65	5	27
7	Increases dependency of external inputs	3.78	3	21
Social Sustainability				
1	Indigenous knowledge is recognized	4.14	1	5
2	Produces safety and nutritious food	3.86	3	17
3	Technology safer to human and animals	4.05	2	7
4	Organic farming benefits both producers and consumers	3.65	6	27
5	Organic farming will sustain the health of soil, plant animal and human	3.84	4	19
6	It leads to healthy atmosphere	3.6	7	30
7	It is self-sustaining	3.67	5	25

farming reduces water pollution (19th rank) and organic farming conserves and preserves environment (18th rank).

When economic sustainability is concerned, the items that got highest mean score were organic farming help farmer to become self-sufficient with minimal risk in long run (1st rank), organic products fetches better prices to farmers (2nd rank). Items that got least mean score were that organic farming enables availability of high quality food at reasonable price (7th rank) and it reduces the cost of production (6th rank). Further in case of social sustainability, indigenous knowledge is recognized got highest mean score and bagged first rank followed by technology safer to human and animals (2nd rank). Items organic farming leads to healthy atmosphere and organic farming benefits both producers and consumers got least mean score and bagged seventh and sixth rank, respectively.

Sustainability of organic farming on three pillars

Regarding ecological sustainability of organic farming, it was found that 47.50 per cent of respondents responded that organic farming is highly sustainable followed by less sustainable (28.33%) and sustainable (24.16%). Mean score and standard deviation values obtained for ecological sustainability were 77.25 and 14.07 respectively. Adoption of organic farming practices along with their farming experience have made farmers to realize the benefits of organic farming like improving in flora and fauna, conserving and recharging the farm sources, avoidance of resurgence of pest and diseases, improving the organic content of the soil, improving microbial activity in soil and improving water holding capacity of soil. All the above reasons may be attributed to the above trend of findings.

It can be noticed that 52.50 per cent of respondents felt that organic farming is sustainable followed by highly sustainable (30.00%) and less sustainable (17.50%). Mean score and standard deviation values obtained for economical sustainability were 26.14 and 4.73 respectively. It can be inferred that 82.50 per cent of the organic farmers' perception belonged to economically sustainable to highly sustainable category. It may be due the fact that the organic farmers with their high level of experience in farming perceive that organic farming help farmer to become self-sufficient with minimal risk in long run, organic products fetches better price for them, decreases dependency on external inputs and there by

Table 2: Sustainability of organic farming on three pillars

Category	Criterion Score	Frequency	Per cent	Mean	SD
Ecological sustainability					
Less Sustainable	< 70.21	34	28.33		
Sustainable	70.21- 84.29	29	24.16	77.25	14.07
Highly Sustainable	> 84.29	57	47.50		
Economical sustainability					
Less Sustainable	< 23.77	21	17.50		
Sustainable	23.77- 28.50	63	52.50	26.14	4.73
Highly Sustainable	>28.50	36	30.00		
Social sustainability					
Less Sustainable	< 24.60	29	24.16		
Sustainable	24.60-29.06	34	28.33	26.83	4.46
Highly Sustainable	> 29.06	57	47.50		
Overall sustainability					
Less Sustainable	< 118.78	35	29.16		
Sustainable	118.78- 141.68	28	23.33	130.23	22.87
Highly Sustainable	> 141.68	57	47.50		

reduces the cost of cultivation. Also the promotional efforts of department of agriculture in the state through implementation of organic farming policy 2017 which provides good marketing linkages for the organic farmers have resulted in above trend of findings.

In case of social sustainability of organic farming, 47.50 per cent of organic farmers considered organic farming as highly sustainable, 28.33 per cent of organic farmers considered organic farming as sustainable and 24.16 per cent perceived organic farming as less sustainable. Mean and standard deviation values obtained for social sustainability were 26.83 and 4.46 respectively. It may be due to the fact that the organic farmers have high level of adoption of organic farming practices leading to development of favorable attitude towards organic farming. Further their experience in organic farming have made them realize the benefits of organic farming like recognition of indigenous technical knowledge, technology used in organic farming is safe for humans and animals, produces safety and chemical free food and will sustain the health of soil, plant, animal and human being.

In overall, it can be observed that 47.50 per cent of organic farmers belonged to category which found organic farming highly sustainable, while 29.16 and 23.33 per cent belonged to the category which stated that organic farming as less sustainable and sustainable, respectively. The ground reason for the above trend of findings is due to high level of farming experience and adoption level of organic farming practices. When the farmers gain more experience in organic farming, they tend to adopt the organic farming practices and also their experience would have realized the importance of different facets of organic farming sustainability like ecological, economic and social sustainability.

CONCLUSION

It can be inferred from the results that there was similar trend of results with respect to ecological and social sustainability of organic farming where nearly half of the organic farmers (47.50%) perceive organic farming is ecologically and socially sustainable. While economical sustainability of organic farming is concerned, only 30.00 per cent of the organic farmers perceived that organic farming is economically sustainable. Major reason for this finding is because of improper marketing linkages for organic produce due to which the organic farmers are not deriving the good price for their organic produce. Hence the study draws the attention of the concerned agencies to develop proper marketing linkages which would yield good price to the organic farmers. Collaborative or group approach of organic farmers would help the farmers. Further the registered exclusive organic outlets should be linked to the organic farmers associations which would avoid lot of market intermediaries.

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