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GR Madhulika
Department of Rural
Technology, Dr. C. V. Raman
University, Kota, Bilaspur
Chhattisgarh, India

Anupam Kumar Tiwari
Department of Rural
Technology, Dr. C. V. Raman
University, Kota, Bilaspur,
Chhattisgarh, India

Kamal Kumar Sen
Department of Rural
Technology, Dr. C. V. Raman
University, Kota, Bilaspur,
Chhattisgarh, India

Corresponding Author:
GR Madhulika
Department of Rural
Technology, Dr. C. V. Raman
University, Kota, Bilaspur
Chhattisgarh, India

A comparative study of farmers perspective on organic and conventional farming in Bilaspur, Chhattisgarh

GR Madhulika, Anupam Kumar Tiwari and Kamal Kumar Sen

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Abstract

Organic farming was introduced in the early 20th century as an alternative to conventional agriculture. Since its initiation, more than 0.83 million productions have been recorded in India. The Asian region recorded approximately 4.9 million hectares, and India holds the first position among the total organic producers with 13.5%. The thumb rule of organic farming is that farmers do not have the option to use chemical fertilizers and pesticide while conversion. The main objectives of this study were to determine the farmers perspectives in the context of the cost of cultivation and farm income for organic farming in the Bilaspur district of Chhattisgarh. This study was carried out in the Bilaspur district of Chhattisgarh. A pre-tested interview schedule was used to extract primary data from 350 farmers. A paired t-test used to examine whether there is a significant difference in income between organic and conventional farmers. The p-value obtained 0.998, which is much higher than the commonly accepted significance level of 0.05. The study concludes that organic farming practices were comparatively low in the study area.

Keywords: Organic farming, Conventional agriculture, Soil fertility, Food security

Introduction

The ancient Indian literature is evident that agriculture has been practiced since the Vedic periods advocated excellent knowledge of cropping seasons, crop management and protection, land utilization, soil nutrient management, integration of various crop elements, etc. Since the 1940s, commercial farming has been started with mechanization and improved crop science. Further, this change was called the Green Revolution. Intensive use of chemical fertilizers and pesticides, high-yielding variety (HYV), mechanized farm equipment, and improved irrigation technologies have definitely yielded double and sometimes triple crop production. It was good enough for food security throughout the world. But this change raised some serious issues, viz., human health hazards, chemical exposure through excessive chemical pesticides, depletion of soil health, desertification and environmental degradation, etc. [1].

The serious issue needs serious solutions; in this regards researcher advocated an organic farming system to resolve those drawbacks. It is considered a solution which encountered during conventional farming [2]. Organic farming was introduced in the early 20th century as an alternative to conventional agriculture. Since its initiation, more than 0.83 million productions have been recorded in India. The Asian region recorded approximately 4.9 million hectares, and India holds the first position among the total organic producers with 13.5%. Likewise, India secured third position in terms of total organic farming area. The growing organic market simultaneously increases organic vegetable production. Both fruits and vegetables collectively shared 30% of the total crop production in Indian agriculture. The National Programme for Organic Production in India registered a total of 3.56 million hectares for organic production. It consists 50% from organic crop production and rest of 50% from wild harvest collection. India is a growing market for organic products. It generated Rs. 24.77 billion in revenues while exporting 0.31 million tonnes of various organic products globally [3]. The main objectives of this study were to determine the farmers perspectives in the context of the cost of cultivation and farm income for organic farming in the Bilaspur district of Chhattisgarh.

Soil Productivity

The soil productivity and crop yield are the most common research questions associated with organic farming. Numerous literatures found in this regard. Watson et. al. (2002) reported that different entities of organic agriculture enhance physico-chemical and biological properties of soil. Farmers may be advised to add livestock and poultry products for effective nutrient management^[4]. The thumb rule of organic farming is that farmers do not have the option to use chemical fertilizers and pesticide while conversion. Thus, animal and plant-based organic manure are the sole option to maintain soil fertility. Bhaskaran & Krishna (2009) recommended the application of poultry manure and vermicompost to maintain soil fertility for vegetable cropping. Vegetable crops are the most common crops under organic farming^[5]. Singh et. al. (2020) described five types of organic fertilizer for enhancing soil fertility, i.e., bulky organic fertilizer, green manures, concentrated organic fertilizers, guano and biofertilizers. These organic fertilizers are produced naturally by both animals and plants^[6]. Various studies have shown that crop rotation helps to improve and restore soil nutrients. According to the Council Regulation (EC) No. 834/2007 on organic farming, soil fertility is significantly maintained by crop rotation while shifting to organic agriculture^[7, 8, 9].

Sustainable Livelihood

Small landholding under 90% of the world's farms employed approximately 1.3 billion people in developing countries. Those small farms generate livelihood for two-thirds of rural people from 3 billion rural population. The sustainable livelihood approach through organic farming suggests integrating various crops with livestock. It provides additional income to farmers and also helps to enhance productivity. Various components under the integrated organic farming system (IOFS) model have found a successful approach for crop diversification, food security, employment generation, income generator etc.^[10]. The mountainous state in northeastern India, called Sikkim, is recognized as a fully organic state with its ecological and economic potential for organic farming. Since 2003, the Government of Sikkim has initiated an organic mission. This mission was designed to cultivate spices and condiments, fruit crops, and medicinal plants. The farmers livelihood and socio-economic status have been boosted through organic farming in Sikkim. A systematic approach of diversified livelihood options recorded agri-tourism, organic certification and value addition achievements. These community-based approaches uplifted marginal farmers, who have significant land holdings in this state^[11].

A remarkable livelihood was reported for small-scale farmers in Wanzai, south China, where organic rice producers got a profit per ha as compared to the conventional farmers. The small-scale farmer who practiced organic farming merely focused on scaling up household incomes. Local government provided continuous support for the cooperative formation among farmers. It ensures capacity buildup, market capturing, new technology interventions and good farming practices^[12]. Likewise, young organic farmers from Japan have remarkable achievements in organic agriculture. Under the neoliberal condition in Japan, organic agriculture was raised as an alternative food system^[13]. Nepalese farmers mostly preferred soil health and productivity for sustained

livelihood under organic agriculture. The Soil and Management Directorate, Nepal, reported that overuse of chemical-based fertilizers and pesticides caused serious soil health issues. It simultaneously declined soil productivity. The 10th Five-Year Plan of the Government of Nepal launched organic agriculture to overcome this situation. A remarkable initiative done by INSAN NGO helped promote and adopt organic agriculture among marginal farmers^[14].

Food Security

The commercial agriculture model is collectively practiced with high-yielding varieties (HYVs), improved plant protection techniques, modern equipment and machinery, and artificial intelligence. All these factors play a vital role in food security strategy, where the food is accessible, affordable, utilized, and stable. In this context, it is subject to debate in the scientific community whether organic agriculture fulfills the food security norms up to mark. Researchers raised questions about whether conventional agriculture can really be replaced by organic agriculture^[15]. Although the global food market is demanding organic food. Consumers are very concerned about the adverse effects of adulterated and contaminated foods with synthetic chemicals. In this regard, consumers move towards organic food as alternate of conventionally produced food. Organic food is safer and healthier in terms of nutrients, environmental and agricultural^[16]. Various studies advocate the lower limit of chemical pesticide residues on organic foods^[17, 18].

Materials and Methods

This study was carried out in the Bilaspur district of Chhattisgarh. A pre-tested interview schedule was used to extract primary data from 350 farmers. The sampling frame consists of 175 registered organic farmer list made available from the government official site and 175 conventional farmers in the same villages by randomly. Collected data were analyzed with frequency, percentage, mean, standard deviation, and paired t-test.

Results & Discussion

Demographic Analysis

Age of respondents categorized into three groups (Table 1), the majority of the respondents belong to the age under 56–70 years, representing 46.57 per cent of the total sample. Among them, 53 per cent are organic farmers and 41 per cent are conventional farmers. It indicates that old aged farmers are more involved in both types of farming, particularly in organic farming with experience. The middle age group of 31–55 years represents of 35.14 per cent of the total studied population. Where 36 and 34 per cent organic farmers and conventional farmers showing a moderate level of participation respectively. The youngest responded fall into 18–30 years age group. It only 18.29 per cent of the total sample, of which includes 11 and 25 per cent of organic farmers and conventional farmers respectively. This data supports comparatively less engagement of farmers in organic farming. The gender-wise participation in farming were examined in the study area. The male respondents are dominated in both farming systems, comprising 77.14 per cent of the total sample. The female respondents constitute 22.86 per cent of the total sample, which reflects lower involvement in farming. Education is key element for overall development human being and society. It much

important for farmers while technologies intervene at every step of farming. In this study the majority of the respondents have attained primary schooling with elementary education, accounting for 70 per cent of the total sample. Among them, 63 and 77 per cent are organic and conventional farmers respectively. Higher educated respondents consist 22.57 per cent of the total studied population. The higher portion of respondents fall into the organic farming 31 per cent as compared to the conventional farming 14 per cent.

Crop Cultivation Pattern

The type of crops cultivated under organic and conventional farming systems was estimated. Cereals mostly paddy crop cultivated throughout the Chhattisgarh region and called rice bowl of India. In the studied area observed that paddy under cereals accounts highest proportion (35.43 per cent) of the total sample, with a significantly larger share among conventional farmers (53 per cent) compared to organic farmers (18 per cent). This data indicating the dominance of cereals in conventional farming. Likewise, vegetable cultivation constitutes 34.57 per cent of the total respondents and is more prevalent among organic farmers (49 per cent) than conventional farmers (21 per cent). Pulses are grown by 18.86 per cent of the farmers. A smaller proportion of respondents are engaged in the cultivation of spices (6.29 per cent) and fruits (4.86 per cent).

Cost of Cultivation and Income Pattern

The annual cost of cultivation of both organic and conventional farmers observed according to their landholding size. The majority of organic farmers (50 per cent) incur a cultivation cost ranging from ₹80,000 to ₹1,00,000. In contrast, 65 per cent of the conventional farmers fall under the cost range of ₹60,000–₹80,000.

Farmers with higher land holding account for the highest cost of cultivation (₹1,00,000 and above), representing 11 per cent of organic farmers and 7 per cent of conventional farmers. The annual income of organic and conventional farmers as according to their landholding size was estimated. It is evident that a 74 per cent of organic farmers achieved less than ₹1,25,000 per annum, whereas only 50 per cent of conventional farmers belongs to this income group. In the medium income range of ₹1,25,000–₹3,75,000, obtained by 16 and 33 per cent of organic farmers and conventional farmers respectively. Thus, the highest income group of above ₹3,75,000 recorded 10 per cent by organic farmers and 17 per cent by conventional farmers.

Test of Hypothesis

H_0 – There is no significant difference in income between organic farmers and conventional farmers.

H_1 – There is a significant difference in income between organic farmers and conventional farmers.

A paired t-test (Table 2) used to examine whether there is a significant difference in income between organic and conventional farmers. The mean value for both variables was found to be 58.33, indicating that the average scores are almost identical. The calculated t-statistic (-0.002) is very close to zero, which shows a negligible difference between the paired observations. The p-value obtained 0.998, which is much higher than the commonly accepted significance level of 0.05. Therefore, the null hypothesis cannot be rejected. This result showed that there is no significant difference in income between organic farmers and conventional farmers in studied area. Hence, the paired observations do not differ statistically, and any observed variation is due to random chance rather than a real effect.

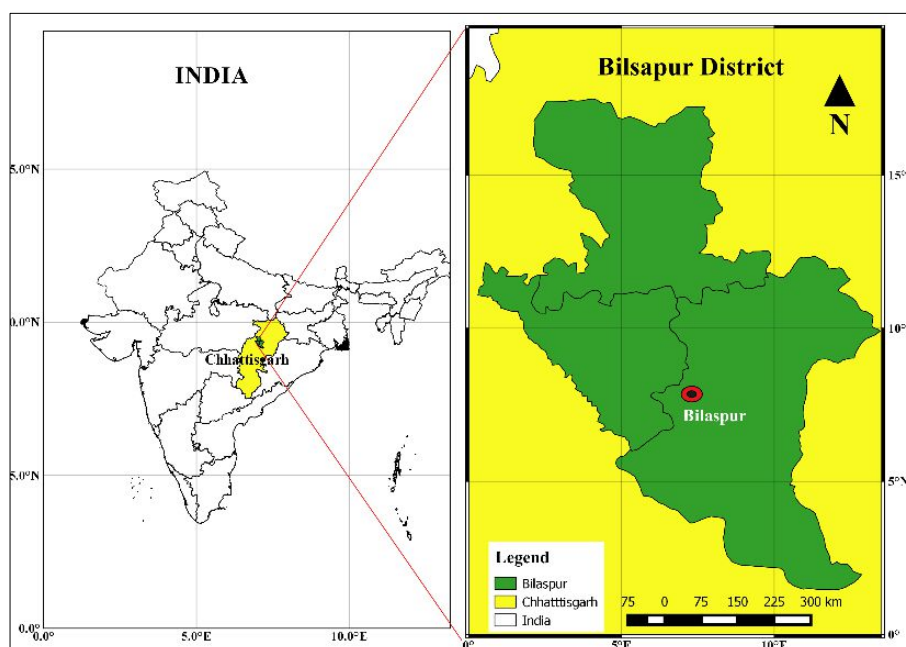


Fig 1: Study map

Table 1: Demographic data

Variables	Organic Farmers (%)	Conventional Farmers (%)	Total (%)
Age Category			
18-30	11	25	18.29
31-55	36	34	35.14
56-70	53	41	46.57
Gender Ratio			
Male	71	83	77.14
Female	29	17	22.86
Education			
Illiterate	6	9	7.43
Primary	63	77	70.00
Higher	31	14	22.57
Cultivation			
Cereals	18	53	35.43
Vegetables	49	21	34.57
Pulses	22	15	18.86
Spices	7	6	6.29
Fruits	4	6	4.86
Cost of Cultivation			
60000-80000	38	65	
80000-100000	50	29	
100000 & above	11	7	
Annual Income			
<125000	74	50	
125000-375000	16	33	
>375000	10	17	

Table 2: Paired t-test

Annual Income	Organic Farmers (%)	Conventional Farmers (%)	Total (%)	Mean	df	t stat	p-value
<125000	74	50	62.29	58.33	2	-0.002	0.998
125000-375000	16	33	24.29				
>375000	10	17	13.43				

Conclusion

The study concludes that organic farming practices were comparatively low in the study area. Farmers much concerned about the economic losses during conversion periods. Due to low technical knowledge and experience, conventional farmers avoid innovative ideas and technologies on the farm. It was also found that the farm income in both manners have not significantly difference. That is the major obstacle to switching into organic farming. However, it is a great challenge to convince farmers to adopt organic agriculture in this area. This study recommends an extensive farmers training and awareness programme for small and marginal sections.

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References

1. Miller H. Can Organic Farming Feed the World?. Hohonu. 2008 Mar 1:35.
2. L  pple D, Van Rensburg T. Adoption of organic farming: are there differences between early and late adoption?. Ecological economics. 2011 May 15;70(7):1406-1414.
3. Singh SP, Patel CR, Paikra KK. Organic farming: prospects, constraints, opportunities and strategies for sustainable agriculture in Chhattisgarh—A Review. Int J Plant Soil Sci. 2020 May 6;32(4):35-50.
4. Watson CA, Atkinson D, Gosling P, Jackson LR, Rayns FW. Managing soil fertility in organic farming systems. Soil use and management. 2002 Sep;18:239-247.
5. Bhaskaran UP, Krishna D. Effect of organic farming on soil fertility, yield and quality of crops in the tropics.
6. Singh TB, Ali A, Prasad M, Yadav A, Shrivastav P, Goyal D, *et al.* Role of organic fertilizers in improving soil fertility. In Contaminants in agriculture: sources, impacts and management 2020 Apr 26 p. 61-77. Cham: Springer International Publishing.
7. Doltra J, Gallejones P, Olesen JE, Hansen S, Fr  seth RB, Krauss M, *et al.* Simulating soil fertility management effects on crop yield and soil nitrogen dynamics in field trials under organic farming in Europe. Field Crops Research. 2019 Mar 1;233:1-1.
8. Hou J, Gao X, Entz MH. Enhancing zinc and iron bioavailability through crop rotation and organic farming: Insights from a long-term study. Field Crops Research. 2025 Mar 1;322:109710.
9. Niether W, Macholdt J, Schulz F, Gatteringer A. Yield dynamics of crop rotations respond to farming type and tillage intensity in an organic agricultural long-term experiment over 24 years. Field Crops Research. 2023 Nov 1;303:109131.
10. Layek J, Das A, Ansari MA, Mishra VK, Rangappa K, Ravisankar N, *et al.* An integrated organic farming system: innovations for farm diversification, sustainability, and livelihood improvement of hill farmers. Frontiers in Sustainable Food Systems. 2023 Apr 17;7:1151113.

11. Abdullah M, Parvin SS. Organic Farming through Sustainable Production, Its Socio-Economic Impacts in Rural Livelihood and for Community Development. *Applied Agriculture Sciences*. 2024 Jul 23;2(1):1-1.
12. Qiao Y, Martin F, Cook S, He X, Halberg N, Scott S, *et al*. Certified organic agriculture as an alternative livelihood strategy for small-scale farmers in China: A case study in Wanzai County, Jiangxi Province. *Ecological Economics*. 2018 Mar 1;145:301-7.
13. Rosenberger N. Young organic farmers in Japan: Betting on lifestyle, locality, and livelihood. *Contemporary Japan*. 2017 Jan 2;29(1):14-30.
14. Ravisankar N. Organic farming: an integrated approach for sustainable livelihood. *Futuristic strategies and options for profitable organic farming*. 2023;9.
15. Batra V. Does organic farming ensure food security? An analysis of developing countries. *Asian Journal of Agricultural Extension, Economics & Sociology*. 2023;41(5):165-75.
16. Meemken EM, Qaim M. Organic agriculture, food security, and the environment. *Annual Review of Resource Economics*. 2018 Oct 5;10(1):39-63.
17. Barański M, Średnicka-Tober D, Volakakis N, Seal C, Sanderson R, Stewart GB, *et al*. Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses. *British journal of nutrition*. 2014 Sep;112(5):794-811.
18. Dangour AD, Lock K, Hayter A, Aikenhead A, Allen E, Uauy R. Nutrition-related health effects of organic foods: a systematic review. *The American journal of clinical nutrition*. 2010 Jul 1;92(1):203-210.