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A Study On The Impact Of Organic Farming On Crop Yields And Farmers Income For Achieving Sustainable Agriculture In Davangere District

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Abstract

The excessive use of chemical inputs in conventional Indian agriculture has led to soil degradation, declining biodiversity, and adverse environmental consequences. In response, organic farming has emerged as a sustainable alternative, supported by initiatives such as the Paramparagat Krishi Vikas Yojana (PKVY). This study assesses the impact of organic farming practices on crop productivity and farmers' income in the Davangere district of Karnataka. Field demonstrations were conducted by Krishi Vigyan Kendra on selected crops—onion and arecanut in the Rameshwara cluster, and mango and tomato in the Santhebennur cluster—comparing traditional practices with integrated organic approaches. Results indicate that Organic + Farmers' Practice significantly improved yields, net returns, and benefit-cost (BC) ratios, particularly in arecanut and mango crops. Despite higher production costs, organic methods demonstrated enhanced profitability and long-term viability. The findings highlight the potential of organic farming, under PKVY, to contribute to sustainable agriculture and rural economic development in India.

Keywords: Organic farming, PKVY, crop yield, farmers' income, sustainable agriculture, BC ratio, Davangere.

Introduction

The Indian economy is entirely based on agriculture. In the last few decades, using too many chemicals, herbicides and fertilisers has damaged the soil, lowered biodiversity, and resulted in ill effects on both people and the environment. Now, organic farming has become a good option because it uses natural materials, protects the health of the soil, and keeps the ecosystem safe.

Organic farming is a Process of growing crops that takes into account the health of the whole environment. It supports and improves things like biological cycles, biodiversity, and soil biological activity. Traditional farming methods, green manures, bio-fertilizers, and crop rotation are used to keep the land fertile and keep pests and diseases under control. No synthetic inputs are used.

The Indian government introduced the Paramparagat Krishi Vikas Yojana (PKVY) in 2015 as part of the National Mission on Sustainable Agriculture (NMSA) to promote organic farming. Through a cluster-based technique, PKVY wants to help and encourage farmers to switch to organic farming methods. Over the course of three years, this program helps groups of farmers convert to organic farming by giving them

subsidy, training, and help with getting certified. The plan not only promotes sustainable farming, but it also supports participatory guarantee systems (PGS) for organic certification, which reduces the costs for small and marginal farms.

Agriculture is a major part of people's lives in rural areas like Davangere. The introduction of PKVY has promoted new chances for farmers to increase crop yields and make more money through sustainable methods. This study looks into how much PKVY has influenced farming methods, crop yields, and farmer income in the area.

India's dependence on agriculture for sustaining livelihoods and the economy underscores the need to adopt sustainable farming practices that promote social health, environmental conservation, and economic growth. Organic farming, with its natural and biological processes, is crucial for achieving this balance between the environment and livelihood while promoting production and product quality (Roshan Raj Bhujel and Harisha G. Joshi ,2023).

Materials and Methods

A number of studies had been carried out with particular crops to investigate the impact that the implementation of organic farming practices has on the increase in the amount of income and productivity that farmers achieve. Subject Experts from Krishi Vigyan Kendra conducted a series of demonstrations on a selection of crops, including onion and arecanut in the Rameshwara cluster, and mango and tomato in the Santebennur cluster. These demonstrations were carried out in specified areas. The demonstration trial was compared to the chemical practice that was already in place, as well as to the organic and chemical practice. All of the information on the yield, gross returns, cost of production, net returns, and benefit cost ratio has been calculated in order to determine whether or not the technology is worth pursuing.

Results

Demonstrations were conducted by the experts of Krishi Vigyan Kendra on chosen crops such as onion and Arecanut in the Rameshwara cluster, and mango and tomato in the Santebennur cluster. The demonstration experiment was contrasted with the current chemical methodology in relation to both organic and chemical practices and the observations were recorded in the Table 1 and 2.

Rameshwara cluster (**Table 1**)

From the available data in Onion, Organic + Farmers' Practice yields 36.4 q/ha (18.5%) more than Farmers' Practice alone. Both practices yield the same net returns (₹117,280) due to identical gross returns but differing costs The BC ratio for Organic + Farmers' Practice is 1.70, higher than Farmers' Practice (1.55), indicating better cost efficiency.

Where as in Arecanut Organic + Farmers' Practice increases yield by 8.76 q/ha (63.8%) compared to Farmers' Practice and Organic + Farmers' Practice achieves an additional ₹284,726 in net returns. Organic + Farmers' Practice achieves a higher BC ratio (6.67) than Farmers' Practice (5.35**),** indicating superior profitability.

Table 1. Impact of PKVY on Crop Productivity and income status of the farmers in Rameshwara Village

Cluster	Crop	Farming Situation	Yield (q/ha)	Gross Cost (Rs.)	Gross Returns (Rs.)	Net Returns (Rs.)	BC ratio
Rameshwara	Onion	Farmers Practice	196.4	151860	282960	117280	1.55
		Organic + Farmers practice	232.8	165680	282960	117280	1.70
	Arecanut	Farmers Practice	13.74	132150	708300	576150	5.35
		Organic + Farmers practice	22.5	151624	1012500	860876	6.67

Santhebennur Cluster (Table 2)

In Mango it was recorded that, Organic + Farmers' Practice increases yield by 11.1 q/ha (29.9%) compared to Farmers' Practice alone whereas Organic + Farmers' Practice yields ₹24,696 (37.9%) more net returns. .The BC ratio improves from 2.34 to 2.55, indicating better cost-effectiveness with organic integration.

Uma and Kumar (2025) reported the similar type of observations in major fruit crops.

In case of Tomato crop the treatment Organic + Farmers' Practice increases yield by 83.3 q/ha (16.4%) over Farmers' Practice and the same treatment achieves ₹48,046 (19.6%) higher net returns. The BC ratio improves slightly from 2.50 to 2.61, reflecting increased profitability.

Valentina Quintarelli et al (2024),observed that the application of PGPMs combined withthe foliar application of algae-based biostimulants can supportthe growth and fruit yield of processing tomatoes under organiccropping systems. The inoculation of tomato plants with PGPMsimproved plant morphological parameters determining well-established plants mitigating transplanting stress of tomato seed-lings and showing more resilient tomato plants compared to thenon-inoculated plants for the whole growing season.

Table 2. Impact of PKVY on Crop Productivity and income status of the farmers in Santhebennur Village

Cluster	Crop	Farming Situation	Yield (q/ha)	Gross Cost (Rs.)	Gross Returns (Rs.)	Net Returns (Rs.)	BC ratio
Santebennur	Mango	Farmers Practice	37.83	483.16	113490	65174	2.34
		Organic + Farmers practice	49.16	57610	147480	89870	2.55
	Tomato	Farmers Practice	509.3	162816	407440	244624	2.50
		Organic + Farmers practice	592.6	181410	474080	292670	2.61

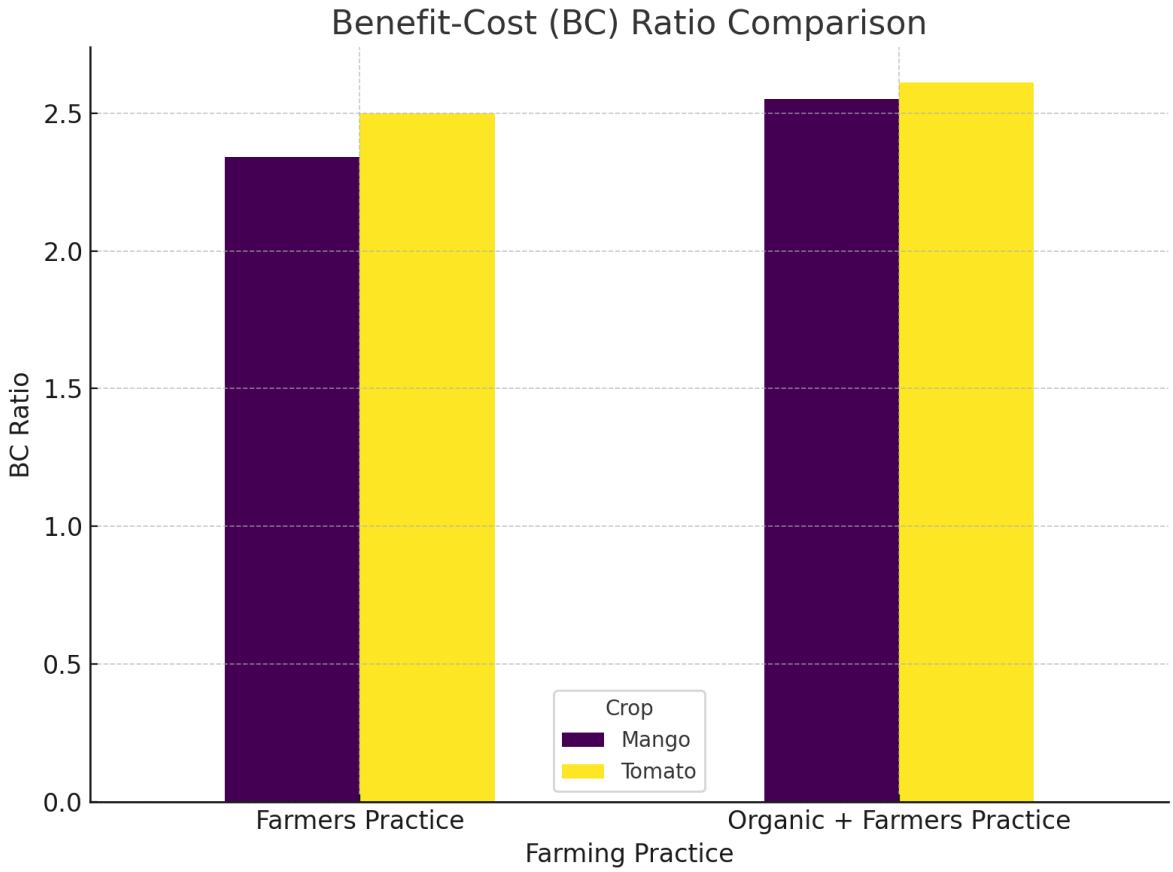

Fig.1: Benefit-Cost (BC) Ratio comparison for Mango and Tomato under Farmers Practice and Organic + Farmers Practice

Discussion

Rameshwara cluster

Comparatively to Farmers' Practice alone, the Organic plus Farmers' Practice strategy produced greater yields and a somewhat better BC ratio. Still, net returns are the same; maybe this is because rising production costs balance the yield increases. Although the organic method produced noticeably better yields, increased expenses caused net returns to not rise. The Organic + Farmers' Practice strategy produced significant increases in production, net returns, and BC ratio in Arecanut, therefore proving the financial and productive advantages of including organic methods. Extreme increases in yield, returns, and BC ratio make the organic method quite beneficial. Agarwal et al (2024), Singh et al. (2024), Verma et al. (2024) and Sabu et al. (2024) obtained the similar kind of observations in their study.

Santhebennur Cluster

Organic approaches led to increased yield, net returns, and BC ratio, proving PKVY's efficacy in mango cultivation. Organic profitability improved due to higher gross returns against higher gross costs. Organic tomato output and net returns increased somewhat, while BC ratio improved little. Organic farming has higher gross expenses, but better returns justify PKVY. The Organic + Farmers' Practice strategy improved mango production more than tomato output. Both crops had higher net returns, especially mango (37.94%). This shows the economic benefits of organic farming using traditional methods. PKVY boosts crop yield and revenue in Santebennur. While both mango and tomato exhibited promising outcomes, mango demonstrated more profitability and efficiency advantages. This shows how organic farming may improve sustainability and economics. The above results are in comparable with the findings of Adison et al (2024), Pradhan et al. (2024) and Kumar et al. (2024).

Conclusion

The PKVY project demonstrates that organic farming methods in Rameshwara and Santhebennur clusters improve agricultural yields and economy. The Organic + Farmers' Practice method in Rameshwara yielded higher yields and better benefit-cost ratios than traditional methods. In Arecanut, combining organic and conventional technologies led to significant increases in yield, net returns, and BC ratios. Organic farming is economically viable for high-value fruits.

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