



ORIGINAL RESEARCH PAPER

Economy

COMPARATIVE ECONOMIC ANALYSIS OF ORGANIC AND INORGANIC FARMING: IMPLICATIONS FOR SOIL HEALTH AND ECOSYSTEM SUSTAINABILITY IN KARNATAKA.

KEY WORDS: Organic Farming, Inorganic Farming, Agriculture Economics, Production Cost, Farm Profitability, Rural Development, Soil Health, Ecosystem, Sustainability, Karnataka.

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ABSTRACT

Agriculture plays a major role in Karnataka's rural economy which provides employment, income and livelihood opportunities to N number of people. However, due to the increasing cost of Agricultural inputs, over dependence on external resources, reducing soil productivity in some farming systems and also environmental degradation have raised concerns about the long term economic sustainability of agriculture. Organic farming emphasizes on the usage of organic manure, crop residues, biological pest management and locally available resources. The present study examines the "Comparative economic analysis of organic and inorganic farming in Karnataka" focusing on production costs, farm income, profitability, soil health, ecosystem sustainability and long term agricultural development. The study is based on secondary data from official agricultural sources and published research. It also examines the economic significance of soil conservation, biodiversity and the environmental costs associated with agricultural production. The study highlights that the economic viability of organic farming depends on the relationship between production costs, market prices, yield levels, certification expenses and the availability of institutional support.

INTRODUCTION

Agriculture is an important sector in Karnataka's economy and provides livelihoods to many rural households. The agricultural sector contributes to rural employment, food security, the supply of raw materials to industries and the overall development of the state's rural economy.

Agricultural production in Karnataka is not same in all the regions because of differences in rainfall, irrigation facilities, and soil characteristics, cropping patterns, farm size and access to agricultural markets. The sustainability of agriculture depends not only on the quantity of agricultural output but also on the cost of production, profitability, stability of farm income and efficient use of available resources.

Organic Farming emphasizes on organic manure, compost, crop rotation, biological pest management etc. It requires a greater number of labourers and additional expenses associated with certification, transportation and marketing. There might be variations in terms of yields depending on crop type, soil conditions and the farmers experiences.

Inorganic farming involves the use of chemical fertilizers, pesticides, improved seeds, and other purchased inputs. These inputs may increase agricultural productivity and reduce production risks. However, excessive dependence on purchased inputs will increase cultivation costs and expose the farmers to fluctuations in input prices.

Agricultural productivity, input requirements, production stability and long-term productive capacity of land depend on soil health. Similarly Agricultural production also depends on biodiversity and ecosystem services which contributes to pollination, natural pest control, nutrient cycling and other functions. Organic farming has a positive benefit on environment, but these benefits will not provide higher profits to farmers. The outcome depends on market demand, price levels, yields, input requirements, labour availability and government support.

Objectives of the Study

- To Study and Compare the economic performance of Organic and Inorganic Farming in Karnataka.
- To examine the economic importance of Soil Health and Ecosystem Conservation under Organic and Inorganic Farming in Karnataka.

Methodology of the Study

The present study is primarily based on secondary data. The information on various aspects of organic and inorganic farming is collected on various sources like APEDA (Agriculture and processed food products export development authority), National sample survey, research articles, directorate of economics and statistics, development of agriculture and farmer's welfare, Government of India, Government of Karnataka agricultural reports and statistical publications and national programme for organic production (NPOP) etc.

Comparative Analysis of Organic and Inorganic Farming:

Sl.No	Economic Indicator	Organic Farming	Inorganic Farming
1.	Cost of fertilizers	Lower, because of availability of organic manure	Includes expenditure on synthetic fertilizers
2.	Pesticide expenditure	Lower	Involves expenditure on Chemical pesticides
3.	Labour cost	Higher	Depends on mechanization
4.	Yield per hectare	Various one crop to another crop	Relatively higher
5.	Selling price	High price only in established organic markets	Depends on conventional market prices
6.	Certification cost	Involves documentation and certification expenses	Certification is not required
7.	Soil Conservation	Organic Farming supports long-term soil productivity	Depends on Conservation practices
8.	Environmental costs	If managed properly Environmental pressures can be reduced	Excessive usage of inputs generates external costs
9.	Market access	Depends on consumers demand and supply chain and also certification	Depends on conventional marketing channel

10.	Long term sustainability	Benefits through resource conservation	Can be sustained with proper management
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The above table indicates that the economic advantages of organic farming depends on input savings, market premiums and long term conservation of productive resources. Similarly, Conventional farming provides higher return when production is more than the cost of inputs.

From the perspective of Agricultural Economics, the most important thing is not whether one input is natural or synthetic but whether the farming system generates sufficient net return, retaining productive capacity of land and minimizing environmental costs.

Soil health and Ecosystem sustainability as economic issues:

a. Soil health and agricultural productivity

Soil is one of the productive assets of organic farmers. Fertility of soil and its physical condition influences crop yields, input requirements and the long term crop variability of agricultural production. When the organic matter of soil is maintained, agricultural land will become better to retain moisture and also supports nutrient cycling. Usage of organic methods like crop rotation, conservation practices helps to maintain these properties and also it results in reduction in soil erosion, resilience to production risks and so on. However, these outcomes mainly depend on soil conditions, management practices and quality and quantity of organic inputs.

b. Ecosystem Sustainability

Ecosystem sustainability refers to the capacity of an ecosystem to maintain its ecological functions, biological diversity, natural resources base and productive capacity over time without undermining the future generations to meet their needs. In agriculture, ecosystem sustainability involves maintaining soil fertility, conserving water resources, protecting biodiversity, supporting beneficial organisms, regulating nutrient cycles and ensuring the continued availability of natural resources essential for agricultural production.

In Karnataka, Ecosystem sustainability is important because agriculture operates under diverse agroclimatic conditions. The state includes dryland farming regions, irrigated agricultural areas, horticultural belts, and high-rainfall zones. These differences influence the environmental consequences of agricultural production.

Status of organic farming in Karnataka:

Table: Certified Organic Cultivation area in Karnataka 2024-25

Sl.No	Particulars	Area in Hectares	% of total reported area
1.	Organic area	31,236.69	60.10%
2.	Area under cultivation	21,391.92	39.90%
	Total reported area	53,631.61	100.00%

Source: APEDA, National programme for Organic production State wise centralized farm area during 2024-25

The above table shows that total reported certified farm area in Karnataka is 53,631.61 hectares in 2024-25. Out of this area 32,631.69 hectares were reported as organic that is 60.10% of the total, remaining 21,394.92 hectares were considered as area under conversion accounting to 39.90%. The data concludes that, conversion period is important because farmers may incur cost associated with changes in cultivation practices and they also require technical assistance, marketing channels and proper financial support to manage the transition.

Economic importance of the study:

- Organic farming helps to generate additional employment such as compost preparation, manual weeding, crop diversification and other farm operations.
- Productive capacity of agricultural land dependence on water resources and conserving soil fertility.
- There is huge demand in market for organic produce as consumers value certified production methods.
- There should be a proper balance between farmers profitability, rural employment, food production and environmental conservation in order to develop sustainable agriculture.
- Comparison of organic and Inorganic farming will help the policy makers to identify where credit extension services, certification assistance, market infrastructure and soil conservation programme will be more effective.

Suggestions and Policy Recommendation:

- Farmers who wish to switch to organic farming may face additional costs and uncertain returns, such farmers should be provided with financial assistance, technical guidance so that it helps them to reduce financial risk associated with the conversion period.
- Organic farming requires market access to obtain proper prices. Farmers producer organizations, cooperatives storage facilities will help to reduce transaction costs and improve bargaining power.
- Each and every farmers should be trained on how to calculate gross returns, net returns, benefit cost ratio's, planning, market price analysis and so on.
- Agricultural policies should be aimed at conserving soil, biodiversity and should reduce environmental damage.

CONCLUSION:

The comparative economic analysis of Organic farming and inorganic farming highlights the importance of evaluating agricultural production in terms of profitability resource efficiency and long-term environmental sustainability. Profits on the organic farming depends mainly on labour requirements, certification costs, yield performance, market access and on organic inputs. Where as inorganic farming generates higher agricultural returns but at the same time excessive dependence on external inputs increases production expenditure. Overall, we can conclude that from and agricultural economics perspective, the most appropriate farming system is one that generates satisfactory Net returns, manages production risk, maintains soil productivity and reduces environmental costs.

Ultimately, the future of sustainable agriculture in Karnataka depends on achieving a balance between farmers livelihoods, agricultural productivity and environmental protection.

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