

Organic Farming As A Sustainable Agricultural Practice And The Problems Faced By Farmers Adapting It

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Abstract- *Organic farming has become a sustainable farming method that focuses on maintaining soil health, supporting biodiversity, and protecting the environment. However, moving to organic agriculture comes with several challenges, including high start-up costs, lower yields, policy issues, and difficulties in managing crops after harvest. This study looks at how sustainable organic farming is by exploring its role in adapting to climate change and identifying key barriers to its adoption. The research uses secondary data from published studies, government reports, and case studies from India. The findings show that organic farming improves soil fertility, lowers chemical pollution, and supports long-term sustainability, but farmers encounter financial and technical obstacles during the transition. Strengthening policy support, improving training programs, and creating better marketing infrastructure can help more farmers switch to organic methods.*

Keywords: Organic Farming, Sustainable Agriculture, Climate Change Adaption, Agricultural Policies.

I. INTRODUCTION

Agriculture play a vital role in food security, food abundance and in global economy as well. [1]. However, conventional farming have led to a state where it is contributing highly in water pollution, soil degradation and other environmental issues[1], [4]. In recent years organic farming has emerged as a sustainable alternative for conventional farming emphasizing on ecological balance and biological conservation [1], [4].

Despite growing popularity of organic farming, it is facing several challenges as high initial cost, lower yield, limited awareness among farmers[3], [4], [6].

This study aims Organic Farming as a sustainable agricultural practice by analyzing its economical, agricultural and social impact[4], [6]. It focuses to evaluate whetherthe organic farming can successfully address the problems with conventional farming and arise as an optimal solution for those problems [1], [4].This paper further explores the key challenges and potential solutions to promote the adaption of organic farming [5], [7].

II. PROBLEM STATEMENT

Despite of the widely growing recognition of the organic farming across the world, there are still some elements that needs to be addressed in order to make it sustainable. The study by Food and Agricultural Organization states that while organic farming improves soil health and overall biodiversity, farmers still faces the problems like high initial cost crisis, lack of organic input [1]. Lower short-term yields and economic uncertainties eventually discourages farmers from adapting the organic practice.[2]

Therefore, there is a study that critically examine these challenges and identify the practical solutions to enhance the widespread adoption of organic farming as a sustainable practice.

III. LITERATURE REVIEW

There are already several studies that has studies and examined about most aspect of the organic farming as sustainable agricultural practicehighlighting the ecological and economic advantages[1], [4]. According to Food and Agricultural Organization, organic farming increases soil fertility, helps in conserving biodiversity and reducing the dependence on synthetic chemicals. Similarly, International Federation of Organic Agricultural Movements, emphasizes

that organic farming supports the ecosystem balance. In addition to these studies highlights barriers such as limited market access, lack of awareness among farmers and a wide gap between implementation of the policies[6], [4]. There, this paper suggest the need of integrated strategies involving policy intervention, technical innovation and farmer education to promote organic farming [5], [7].

IV. METHODOLOGY

This study is mainly based on the qualitative research approach. It uses the primary and secondary data sources for the analysis.

Primary Data: Focused on the direct field observations. The ground level data has been collected by interviewing the farmers that actually practices the organic and conventional farming. It actually helped to understand the study more practically and to make the comparative study easier.

Secondary Data: The relevant information for this study is collected from the research papers, government reports, and publications by international organizations.

The study analyses existing literature to basically evaluate the economic, environmental and social impact of organic farming.

A comparative approach has been used to access to the limitations of the existing studies. The data collected had been systematically reviewed and understood to identify the key trends, challenges and possible solutions for promoting the organic farming as a sustainable agricultural practice.

V. RESULTS AND FINDINGS

5.1 Organic Farming and Climate Change Adaptation

The results of the study revealed that organic farming is an important strategy in adaptation to climate change[1], [4], [6]. This is based on the evidence of previous studies and reports which revealed that organic farming helps in building fertility in the soil[1], [4]. Organic farming helps in retaining moisture in the soil, which in turn helps in making the plants resistant to drought and irregular rainfall[1], [4]. According to the Food and Agriculture Organization (FAO), organic farming helps in reducing greenhouse gas emissions by minimizing the use of fertilizers[1], [2]. Organic farming can also compensate for 40-72% of greenhouse gas emissions in agricultural activities through carbon sequestration. In addition, recent studies revealed that organic farming helps in increasing soil organic carbon by 7.19% to 41.29%, which in turn helps in mitigating climate change. Despite all these

benefits of organic farming in adapting to climate change, organic farming as a strategy in adapting to climate change still remains low due to a lack of awareness and economic challenges faced by farmers during the transition period[4], [6].

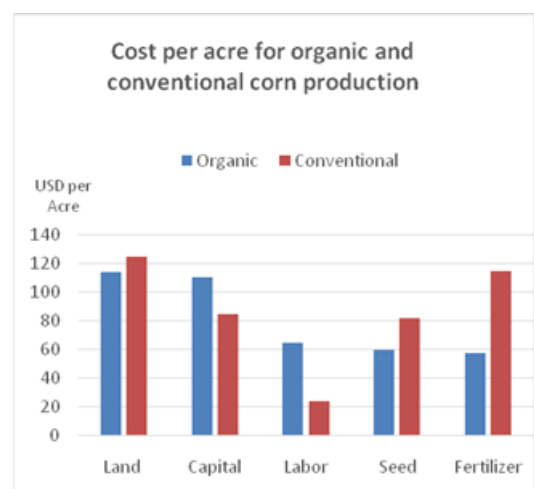
These findings suggest that while organic farming is an effective climate-resilient agricultural approach, stronger institutional support and farmer education are essential for its wider implementation.

5.2 Organic Farming and High Initial Cost Crisis

According to the study's results, high capital expenditure during the conversion period is considered one of the factors that prevent farmers from adopting organic farming. The reason behind this is that farmers tend to have poor harvests when switching from conventional agriculture to organic agriculture. As a result, they cannot earn money from their agricultural output at organic prices. Moreover, organic farming demands more labour costs since farmers need to carry out several tasks manually [3], [4]. For example, farmers will have to weed, prepare the compost, and manage pests themselves. Furthermore, farmers need to pay for certification, inspection, and regulatory compliance services, thus adding to the total expenses [4], [6].

Higher labour requirements and certification costs further increase the burden, especially for small farmers [4], [6]. This issue can be reduced through subsidies, financial support, and low-interest loans during the transition period.

The chart below indicates the study performed in USA on the corn crop which shows the cost per unit per acre is often higher in organic farming. There are several reasons responsible for it like higher labor cost, transition and certification cost, lower early yields.



Source: USDA, Economic Research Service calculations from USDA, National Agricultural Statistics Service's 2011 Certified Production Survey and Crop Production 2011 Summary.

5.3 Yield Gap Between Organic and Conventional Farming

Based on the results obtained from the study, there is a significant yield gap between organic and conventional agriculture production systems especially in the early years after transition. It has been shown through previous research that the yields of organic farming systems are always relatively lower compared to conventional systems with Seufert et al. demonstrating that organic yields have been estimated to be only 80% of those for conventional farming, meaning that the yield gap is about 20% [3]. Zhang et al. also observed that organic yields were about 18.4% lower than those of conventional farms under varying climate regimes [7]. This yield gap is highly dependent on several factors including the type of crops used, soil conditions, climatic zones, and management techniques among others [3], [7]. As suggested by Ponisio et al., diversification techniques such as crop rotation and multiple cropping are effective methods that can reduce this yield gap [5].

But the degree of yield gap differs based on different variables like the type of crop, soils, weather, and other management systems [3], [7]. The research conducted by Ponisio et al. claims that diversification strategies, including crop rotation and multi-cropping, could lead to a reduction in the yield gap [5]. Thus, better organic methods, soil management, and diversification could help reduce the yield gap.

VI. CONCLUSION

The above study has revealed that organic farming is indeed a sustainable agricultural system with immense possibilities to promote sustainability on environmental, economic, and agronomic fronts. The study's objectives have been accomplished by studying the key aspects of organic farming, such as its adaptability in the context of climate change, the issue of high costs at the outset, the yield differential between organic and traditional farming systems, post-harvest problems, and the difficulties associated with implementing policies. From the results of the above study, organic farming plays a positive role in soil fertility, soil moisture retention, biodiversity, and climate change.

However, the research also brought out some serious problems that hinder the wider application of the technology. Among these problems were the cost implications involved in adopting the new technology, lower yields in the initial stages, lack of proper post-production facilities, poor marketing channels, and lack of enforcement of formulated policies in practice. These problems tend to adversely affect smallholder and marginal farmers, who encounter both financial and technological difficulties when switching from traditional to organic systems of crop production.

However, in spite of these problems, all the conclusions drawn by the researchers prove that organic farming should be regarded as a sustainable practice, particularly from an environmental perspective. While there are certain economic drawbacks associated with it in the short run, there are ways in which they can be addressed through proper policies, such as providing subsidies to farmers or improving their awareness regarding this practice. Thus, it could be concluded that organic farming will become a viable approach for future agriculture.

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