

ORGANIC FARMING AND CONVENTIONAL FARMING: A COMPARATIVE STUDY

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ABSTRACT

This study compares and contrasts organic and conventional farming. The study's goal is to evaluate each practice's influence and performance before determining the optimal strategy for growing crops. Agricultural methods can be classified as sustainable or conventional based on the techniques used, despite the fact that there are many different types. The most permanent style of farming is organic farming that grows a variety of crops without using artificial manure. The organic farming improving soil composition, supporting biodiversity relies on ecosystem services. while yet delivering adequate crops. Synthetic chemicals and fertilisers are used in conventional farming to increase the output of a certain crop or set of crops, which are typically genetically modified. This process necessitates a considerable quantity of chemical and energy input and degrades a landscape's ecology. A comparison of soil composition, geography, and rotation systems was made. There is a need for much more detailed research on the subject due to the many distinct elements that influence crop health and productivity. As a result, this paper assessed the two broad styles of farming in detail and then compared the outcomes.

Key word: Conventional Farming, Organic Farming, Integrated Farming.

I. INTRODUCTION

Agriculture has contributed significantly to the advancement of human society. Agriculture has existed since around 10,000 B.C.E., allowing humans to alter ecosystems and increase population expansion (Xtimeline.com). People all throughout the world have been encouraged by science to dwell and establish affluent, permanent settlements. When humanity first learned the power of planting seeds, they gained the capacity to travel the globe and build infrastructure wherever fertile soils existed. Populations grew and development expanded as a result of agricultural breakthroughs. Early agricultural methods were based on local climate circumstances, but it is practice the same plant is being repeated in the field till the soil lose its capacity. Agriculture has become more efficient as a result of techniques like irrigation, intercropping, and crop rotation. However, in the last few centuries, the farming has changed dramatically

many countries have shifted to more traditional practices. Growing populations, economic instability, climate change, and corporate incentives to produce larger yields have all played a role in this trend.

Adopting these traditional ways, on the other hand, exposes farmers to industrial greed, as their crops rely on synthetic chemicals. Farmers that stick to traditional farming methods are trapped in a never-ending cycle of loans, subsidies, and debt.

II. CONVENTIONAL FARMING

In the past history of India, it is observed that tradition farming produced sufficient food for its own consumption and produced surplus for trade. At one point of time, the demand for own consumption and raw materials for industries starting raising due to increasing country's population and world population. The need for alternative method of farming has started requiring to overcome this issue. The agriculture system started using synthetic chemical fertilizers and pesticides and it is named as conventional agriculture or farming. The genetically modified organism, operations of concentrated animal feeding, the concentrated monoculture production are the characteristics of conventional farming.

III. PROS AND CONS OF CONVENTIONAL FARMING

Conventional farming is one of the most widely used farming methods because of its benefits to producers and customers, such as availability and affordability. Besides there are several drawbacks in conventional farming. Following are the advantages and disadvantages of conventional farming.

Benefits of Conventional Farming

1. Gain More

One of the advantages of conventional farming, according to farmers who follow it, is the lower cost of doing so. The cost of synthetic chemical fertilizers and sewage sludge are cheaper than the compost and animal dung which are utilize in the organic farming. They can also plant their crops over a bigger area of land, allowing them to sell at a better price when demand is high. Crop rotation is used alternatively by organic farmers who are unable to do so. Furthermore, because they have a choice of farmlands on which to grow their products, they may produce at reduced costs and profit margins, making conventional farming a profitable strategy.

2. More job opportunities

Traditional farmers argue that there are various ways in which this practice benefits the working class. Because farmers may employ bigger expanses of farmland, potential farm workers will have an easier time finding work in the fields. Other work options include delivery truck drivers, labourers, and helpers. These are in addition to the sales potential for fertilizer makers and producers.

3. Higher Production

It is possible for the farmers to produce more crops in conventional farming as it has low production cost. In addition to that the production in conventional farming is helping to meet the arising demand for the food. In the recent years , the food production has started decreasing due to many natural collapse like global warming, natural disaster, etc. As the conventional farming paves way to produce more crops, many farmers have tuned for this practice of conventional farming than organic farming

4. Lower cost of production

In this competitive business world and era, farmers has chosen this practice of conventional farming so as to have mass-produce of their crop and sell it to consumers at lower price. As the production cost is low in conventional farming, farmers gain more and by the regular supply of raw materials and food at lower price,

they cut throat the competition and survive in the market. And this become a win-win situation to both farmers and consumers.

Disadvantages of Conventional Farming

1. Harmful chemical

Chemical fertilisers and pesticides are utilised and sprayed on the crops, which is one of the disadvantages of conventional farming. These dangerous chemicals can get into crops, and when animals and humans eat them, they are exposed to health concerns associated with the use of synthetic chemicals. According to concerned groups, 13 different toxins can be found in conventionally cultivated vegetables that youngsters eat. Because these children only eat fruits and vegetables that they enjoy, they may be exposed to harmful substances repeatedly.

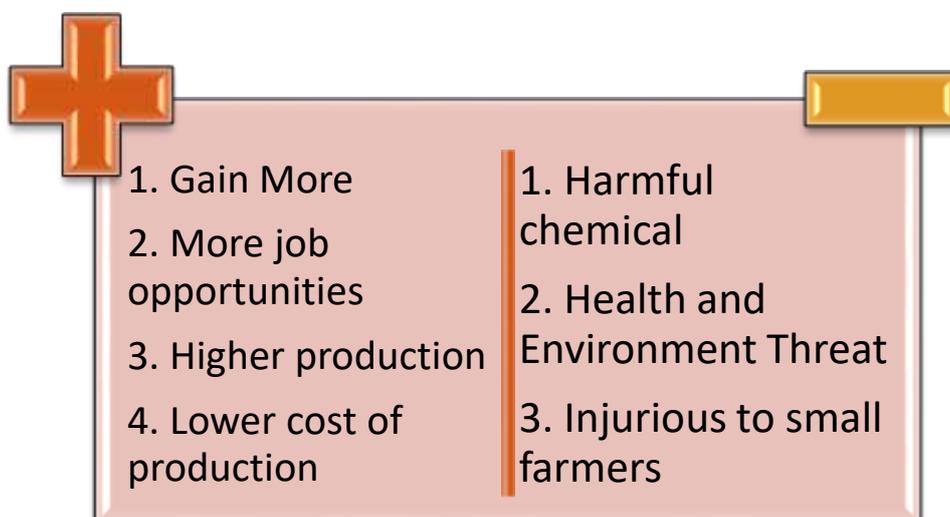
2. Health and Environmental Threats

Opponents of traditional farming allege that it pollutes the environment by releasing byproducts from the processing of pesticides and fertilisers. When it comes to animals utilised for food production, traditional farming has an influence because these animals are fed mass-produced feeds that can injure them.

3. Injurious to Small Farmers

Critics of traditional farming argue that because this method is less expensive and profitable, bigger farming corporations with the means to finance larger amounts of farmland would dominate the business, leaving small farmers with less room to expand.

Figure 1 : Advantages and Disadvantages of Conventional Farming



Traditional farming offers advantages and disadvantages, yet despite these drawbacks, it remains a popular farming approach. Perhaps it is best to encourage farmers to continue their research into generating safer and less expensive products so that they can boost their sales while minimising the negative consequences.

IV. ENTRY OF ORGANIC FARMING

Farmers have relied on conventional farming methods for a long time. Farmers, on the other hand, employ alternative strategies to support the growing population after gaining independence in terms of population increase. New organic methods are being used, resulting in a large volume of agricultural products being produced. People have started concentrating on their health and seeking for quality and safety food and this is not possible by crops which contains chemical pesticides. The genetically modified organism contributes to the negative health impacts of conventionally farmed foods. Furthermore,

conventionally farmed foods are less nutrient-dense and contain less antioxidants. The practice of health conscious bring demand for organic food in the recent decades, because it is not used synthetic pesticides and chemical fertilizer. Organically cultivated foods are becoming increasingly popular as a result of their nutritional and health benefits. Organic farming is more environmentally friendly and and India is a country gifted with home-grown capabilities and the potential for organic agriculture expansion. India has experienced significant growth in organic agriculture and is currently one of the world's major organic producers. As a result, organic farming has a significant impact on India's health by assuring long-term development.

The cultivation technique in which synthetic pesticides and chemical fertilisers are used to increase crop output and profit is known as conventional farming. Synthetic pesticides and chemicals can kill insects, weeds, and pests in conventional farming, while growth stimulants like synthetic hormones and fertilisers can boost growth rates (Worthington, 2001). Consumption of conventionally grown foods is prohibited due to the use of synthetically generated pesticides and artificial fertilisers in conventional farming, and for these reasons, organic farming is progressively gaining popularity.

V. ORGANIC FARMING

Organic farming as a growing method has grown in popularity in recent years (Dangour et al., 2010). For both customers and farmers, organically farmed foods have become one of the finest options. Organically farmed foods are an important aspect of leading a green lifestyle. According to Winter and Davis (2006), the organic farming is an ecological production management system that boosts biodiversity and biological cycles. According to him, it restore, preserve and increase ecological balance. Organic farming is not using synthetic pesticides, growth hormones and genetic modification technique and synthetic chemical.

Principles of Organic Farming

Organic farming food process follows the procedure is that socially, environmentally and economically good to the society that paves way for sustainability. The health, ecology, fairness, and caring are the four principles of organic farming proposed by the International Federation of Organic Agriculture Movements. The highlighted feature of organic farming is that enhance biological cycle to improve the soil fertility. The very most principles of organic farming are avoidance of use of pesticides and synthetic fertilizers that consider the socio-ecological impact and to produce sufficient food with high quality.

VI. ADVANTAGES AND DISADVANTAGES OF ORGANIC FARMING

Advantages of Organic Farming

1. Nutritional benefits

According to AFSSA study conducted in the year 2003, the organically cultivated foods, particularly green vegetables and tubers have higher dry matter than conventionally grown meals. According to them, around 94% of pesticides residues are there in conventional farming food. As a result, organic foods provide superior nutritional value and health protection.

2. Environmental impact

In terms of environmental protection, organic farming has a protective role. The environmental impact of organic and conventional agriculture has been thoroughly researched. Organic farming is thought to be less hazardous to the environment because synthetic pesticides are prohibited, the majority of which are potentially harmful to water, soil, and local terrestrial and aquatic fauna (Oquist et al., 2007). Furthermore, organically managed soils are of superior quality and have greater water retention capacity, resulting in higher yields in organic farms even during drought years (Pimentel et al., 2005).

3. Socioeconomic effect

Organic farming necessitates more labour, resulting in more income-generating employment per farm (Halberg, 2008). According to Winter and Davis (2006), organic products typically cost 10%–40% more than conventionally grown crops, and the price varies depending on a variety of parameters in both the input and output arms. On the input side, the high cost of acquiring organic certification, the high cost of labour in the field, and the lack of subsidies on organics in India, unlike chemical inputs, all contribute to the price of organic goods. However, because of rising health awareness, people are willing to pay a high price. Some organic goods are also in short supply compared to high demand, resulting in a cost increase (Mukherjee et al., 2018). Organic farming is currently a developing economic sector as a result of the profit generated by organic food, leading to an increasing propensity among farmers to practise organic agriculture.

Disadvantages of Organic Farming

1. More Expensive

Compare to conventional farming, the Organic farming is more expensive due to higher production costs, limited land availability and shortage of human power.

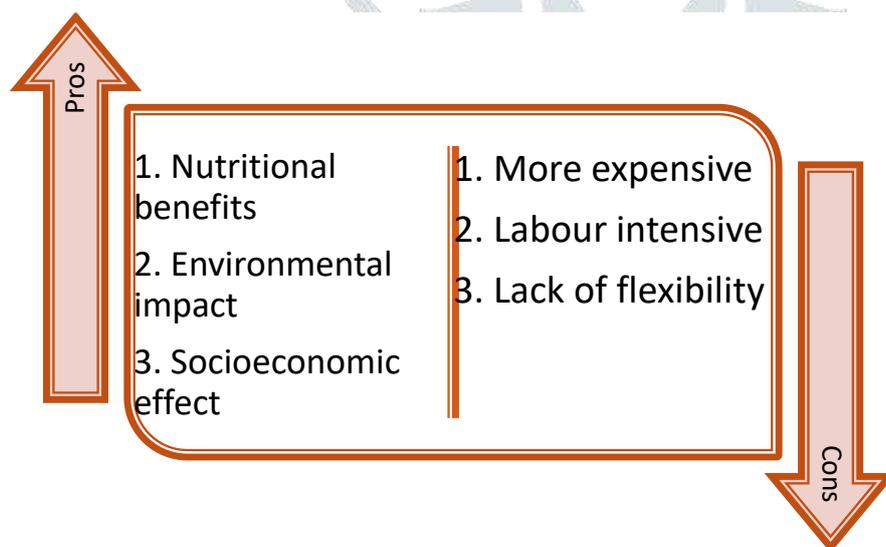
2. Labour Intensive

Organic farming products require a lot of labour to produce, hence they can't meet the needs of the current population.

3. Lack of flexibility

The lack of flexibility and the disadvantage of not employing genetic modification are both drawbacks of organic farming, which necessitates the acquisition of relevant and valuable skills in order to comprehend a healthy farm ecology and increase productivity.

Figure 2 : Pros and Cons of Organic Farming



VIII. ORGANIC FARMING IN INDIA GOVERNMENT INITIATIVE

In India, organic farming is still in its infancy. According to the Union Ministry of Agriculture and Farmers' Welfare, around 2% of sown area of the country is used for organic farming.

Because a large portion of organic farming is concentrated in only a few states, a few states have taken the lead in expanding coverage. Madhya Pradesh is at the top of the list, with 0.76 million hectares under organic cultivation, accounting for about a quarter of India's total organic agricultural area.

The Indian government has recently introduced a variety of programmes and plans aimed at promoting organic farming across the country. The programmes initiated by the Government are

Figure 3 : Programmes that supports Organic Farming



ZBNF (Zero Budget Natural Farming) is a form of farming that eliminates external inputs and uses local resources to renew soils and restore ecosystem health through diversified, multi-layered cropping systems. Compared to chemical and organic farming, it uses 10% less water and 10% less electricity. Cow dung microorganisms breakdown the dried biomass on the soil and convert it into ready-to-use nutrients for plants (300–500 crores of helpful microorganisms per one gramme cow dung). Since 2015–16, the Government of India has implemented the Paramparagat Krishi Vikas Yojana and the Rashtriya Krishi Vikas Yojana under the ZBNF policy (Sobhana et al., 2019). Kumar (2020) claims that the union budget 2020–21, Rs 687.5 crore has been allocated for the organic and natural farming sector which was Rs 461.36 crore in the previous year.

IX. CONVENTIONAL VERSUS ORGANIC FARMING

Any new technology will have both favourable and unfavourable consequences. We may be able to increase the positive parts of how we create food while minimising the negative ones if we study the positive and negative aspects of how we produce food. It is possible in the conventional farming to produce more crops in lesser land with lesser man power. It is moral obligation to produce sufficient food for the people and this is possible only with conventional farming to supply foods at lower price for the people who are in hungry throughout the world. However, because many of the impacts of conventional farming are unknown, and because many of them may be irreversible and damaging, it may be safer to continue doing what we have done for hundreds of years. Continuing to use pesticides, irradiation, and GMOs when we don't know what the negative effects are could be deemed irresponsible.

Organic and conventional farming are fundamentally different in that conventional farming relies on chemical intervention to combat pests and weeds and supply plant nutrients. Synthetic insecticides, herbicides, and fertilisers are included. Organic farming, on the other hand, produces healthy, abundant food by relying on natural principles such as biodiversity and composting.

"Organic production" is defined as "not merely avoiding conventional chemical inputs or substituting natural inputs for synthetic ones." Organic farmers use strategies that have been practised for thousands of years, such as crop rotations and the utilisation of composted animal manures and green manure crops, in ways that are economically viable in today's society. The interaction of management methods is the primary

issue in organic production, which emphasises overall system health. "To generate and maintain biological diversity and replenish soil fertility, organic producers use a variety of tactics" (USDA, 2007).

The environment and people are affected differently by conventional and organic farming methods. Increased greenhouse gas emissions, land erosion, water pollution, and human health are all consequences of conventional agriculture. Organic farming reduces carbon emissions, improves soil health, and replenishes natural ecosystems for cleaner water and air, all while avoiding hazardous pesticide residues.

Table 1 : A glimpse of Organic farming and Conventional arming

	Organic Farming	Conventional Farming
Soil Quality	Soil quality is being improved because of use of natural fertilizers and crop rotation.	There is a possibility of inferior soil quality because of use of artificial fertilizers and pesticides
Nourishments	Natural manure and composites are used for nourishment	Artificial manure are used
Food quality	The cultivated food has high nutrient in it.	Nutrient loss is possible in it.
The effect on the soil	Soil fertility continues.	Soil may become infertile.
Environmental impact	Good to environment	Has toxic effect.
Safer to health	Consuming organic food is good for health	Consuming conventional farming food is unsafe to human health
Quality of soil	Methods like crop rotation retains soil quality.	The methodology followed in this farming is not good for land
Quality of human power	It safeguards human health and helps to increase their productivity	It threatens livelihoods and spoils the productivity of human resource.

X. INTEGRATED FARMING

Despite the numerous advantages of organic farming, conventional farming becomes the best method to manage the expanding population. Furthermore, there are a number of obstacles to this method's global adoption. "Some authors advocate for the use of integrated agricultural practises rather than sticking to organic practises, which they believe are more detrimental than conventional farming practises, such as pest control technologies." (2011, Gomiero, Pimentel, and Paoletti) The effectiveness of agricultural practises is determined by a variety of circumstances, and the most effective type of agriculture frequently necessitates a combination of techniques. Sustainable agriculture, in addition to local limits, necessitates significantly more labour to maintain crops.

Several organic technologies would most likely be advantageous if used in present conventional production methods. The strategy like longer crop rotations which will help to conserve soil and water at the same time reduce insect, disease and wee problems. The technique of off-season cover crop may implement to have variety of crop. The efforts may take to increase soil organic matter that will help to conserve water and mitigates drought effect on crops. By using natural bio diversity, the use of nitrogen fertilisers, fungicides, insecticides and herbicides may get reduced. Not only organic cropping systems, but all agricultural cropping systems have the potential to improve the ecological, energy, and economic sustainability of some or all of these technologies..

CONCLUSIONS

This paper studied the advantages and disadvantages of both conventional farming and organic farming. By comparing the process of these two methods, it is identified that the consideration of drawbacks are more important than the benefits we derived, because it fully related to human life and their livelihood. The conventional agriculture brings land erosion, water pollution and a threat to environment. The health of the people may get affect by consuming chemical food. Because of these, the productivity of human resource will get affect and this leads to country underdeveloped. On the other hand, though the organic farming guaranteed for healthy food, the possibility of sufficient production is a question mark due to natural condition. This scarcity may lead to human resource being unproductive. It may be inferred that boosting organic farming will help to establish a nation that is nutritionally, environmentally, and economically healthy in the near future. However, in today's competitive, technological society, integrated farming, if practicable, may be used to reap the benefits of both organic and conventional farming. The practicable strategy of conventional farming may used in organic farming to produce more and to have healthy nation.

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