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BENEFITS OF ORGANIC FARMING IN PROMOTING SUSTAINABLE FOOD SECURITY

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Abstract

Organic farming offers many benefits in supporting sustainable food security. Through environmentally friendly and synthetic chemical-free practices, organic farming maintains ecosystem health, improves soil fertility, and reduces negative impacts on the environment. In addition to its ecological benefits, the system also supports local economies by providing fairer returns to farmers and creating jobs, which in turn strengthens rural communities. Organic farming also plays an important role in education and awareness-raising about the importance of sustainable practices, thus preparing communities to face future challenges. Thus, organic farming contributes significantly to building sustainable food security that is ecologically, economically, and socially beneficial.

Keywords: Benefits, Organic Farming, Sustainable Food Security.

Introduction

Since the last few decades, conventional agriculture has been the dominant model in global food production, driven by the need to meet the growing demand as the world's population grows. World population growth has become an important phenomenon that affects various aspects of life, from the economy to the environment (Robinson, 2007) . Since the mid-20th century, the global population has experienced a significant surge, fuelled by an increase in birth rates and a decrease in death rates thanks to advances in health and technology. According to United Nations data, the world population is expected to reach around 9.7 billion by 2050, which signifies an increase of more than two billion people compared to the current population (White, 2022) . This growth is uneven, with most of the growth occurring in developing countries that often have limited ability to meet basic needs, such as food, water and housing. This poses challenges for the sustainable management of natural resources and demands global and local policies to ensure a balance between meeting human needs and preserving the environment (Halloran & Clement, 2021)

However, these intensive farming practices have led to various environmental problems, such as soil degradation, decreased biodiversity, and water pollution due to excessive use of pesticides and chemical fertilisers. In addition, the reliance on synthetic

inputs makes these farming systems vulnerable to price fluctuations and climate change (Paull & Dillon, 2011) .

Fluctuations in commodity prices, especially food, are increasingly affected by erratic climate change. Climate change is having a major impact on weather patterns, including an increase in the frequency and intensity of natural disasters such as floods, droughts and storms. These conditions cause uncertainty in agricultural production, which in turn affects the availability of supplies and commodity prices in the market. For example, extreme droughts can damage food crops such as wheat and maize, reducing yields and pushing up prices (International Federation of Organic Agriculture Movements (IFOAM), 2017) . Conversely, flooding can cause infrastructure damage and damage farmland, which also leads to supply disruptions and price spikes. This instability challenges farmers, producers and consumers in economic planning and management, and fuels the need for better adaptation policies and innovations in agricultural systems to reduce the risks associated with climate change (Davis, 2014) .

Amidst these challenges, organic farming is emerging as an alternative that offers a more sustainable approach. Organic farming emphasises the wise use of natural resources, the maintenance of soil fertility through organic matter, and practices that support biodiversity. Many studies show that organic farming systems can reduce negative environmental impacts, improve soil health, and produce food products that are safer for consumers (Food and Agriculture Organisation (FAO), 2007) .

The benefits of organic farming are not only limited to environmental and health aspects, but can also contribute to improving food security. Sustainable food security is not only about access to sufficient food, but also includes the availability of nutritious food, production systems that are resilient to climate change, and stable livelihoods for farmers (Food and Agriculture Organization of the United Nations (FAO), n.d.) . Despite its promising potential, the adoption of organic farming has yet to reach a significant scale, especially in developing countries. This is due to various constraints, including lack of access to information, suboptimal policy support, and economic challenges faced by farmers in the transition from conventional to organic farming (United Nations, 2013) .

This research aims to comprehensively assess the benefits of organic farming in the context of promoting sustainable food security.

Research Methods

The study in this research uses the literature method. The literature research method is a research approach that involves collecting, reviewing, and analysing various written sources such as books, journal articles, theses, and reports to understand and synthesise existing knowledge on a particular topic. This method is often used to identify trends, research gaps, and formulate new hypotheses based on published information (Torraco, 2005) ; (Gough et al., 2012) . The process begins with a clear definition of the research question, followed by a search for relevant literature using

specific databases and indexes, critically reading the information obtained, and organising the findings in a systematic framework. Literature analysis allows researchers to build a strong theoretical foundation, provide historical and theoretical context for new research, and ensure that their research contributes uniquely to the field of study in question (Webster & Watson, 2002) .

Research Methods

Sustainable Food Security: Concepts and Strategies

Sustainable food security is a concept that encompasses the ability to ensure the availability of sufficient, safe, nutritious and accessible food for all individuals in the long term without damaging the natural resource base for future food production. The concept emphasises the importance of a balance between food production and consumption, while considering social, economic and environmental impacts. Sustainable food security recognises that food systems must be able to adapt to change, including climate change, population growth and global market dynamics (Reganold & Wachter, 2016) .

There are four main pillars of food security that must be considered in a sustainable strategy: availability, accessibility, utilisation and stability. Food availability means that there is enough food produced or can be imported to meet the needs of the population. Accessibility refers to the ability of individuals to obtain food both physically and economically. Utilisation includes the appropriate use of food, including dietary variety and nutritional quality. Stability refers to the ability of the food system to continue to provide food even in the face of disruptions such as natural disasters or conflict (Kostov & Mitov ., 2012)

One of the main strategies to achieve sustainable food security is through increased sustainable food production. This includes environmentally friendly farming practices, such as crop rotation, use of organic fertilisers, soil and water conservation, and integrated pest management (Lampkin, 1999) . In addition, modern agricultural technologies such as precision irrigation and the use of climate-resilient crop varieties can also support high productivity with minimal environmental impact. Agricultural diversification, including the cultivation of local food crops, is also important to reduce dependence on a few crops and increase resilience to disturbances (Andersen & Klein, 2014) .

Food security also requires an efficient and equitable distribution system. Good infrastructure, such as roads, transport systems and adequate storage facilities, are essential to reduce post-harvest food losses and ensure food reaches consumers in good quality. Government policies also play a crucial role in supporting farmers, regulating markets and protecting consumers. Subsidies, tariffs and other incentives should be designed to support sustainable food production and distribution and ensure accessibility for vulnerable populations (Singh, 2020) .

Community participation and education are vital components of a sustainable food security strategy. Communities should be encouraged to engage in local agricultural activities, whether through urban farming programmes, community gardens or farmers' markets. Education on nutrition, food waste management and healthy eating patterns needs to be improved to ensure optimal food utilisation. In addition, cooperation between the private sector, government, NGOs and communities is essential to create conditions conducive to sustainable food security (Brown, 2021) .

Sustainable food security must also consider global challenges such as climate change, urbanisation and population growth. Efforts to mitigate and adapt to climate change need to be applied in all aspects of the food system, from agricultural practices to international trade policies. Rapid urbanisation demands innovations in urban food systems, such as vertical farming and integrating digital technologies in food distribution (Simpson, 2005) . Finally, with a growing population, efficient use of natural resources and reduction of food waste must be a top priority to ensure that all people have access to quality food in a sustainable manner (Nelson & Murray, 1990) .

With a comprehensive and collaborative approach, sustainable food security can be achieved, ensuring that the food needs of the present generation are met without compromising the ability of future generations to fulfil their own needs.

Economic Benefits of Organic Farming

Organic farming offers a number of significant economic benefits, both for farmers and the wider community. Firstly, organic agricultural products often have a higher selling price compared to conventional products. This is due to the increasing consumer demand for healthier and safer food free from synthetic pesticides and harmful chemicals. This premium price provides an opportunity for farmers to increase their income, although they may face higher production costs at the beginning of the transition process towards organic farming practices (Hoffman, 2019) .

Secondly, operational costs in organic farming can be reduced in the long run. While the initial investment for the purchase of organic compost and fertilisers may be more expensive than the use of chemical fertilisers, the ability of the soil to maintain its balance naturally reduces the dependence on these external inputs. With time, organically treated soil becomes more fertile, thus reducing the need for additional fertilisers and directly reducing costs incurred by farmers (Jacobs, 2018) .

Third, organic farming improves local economic sustainability by creating jobs. As organic farming tends to be more labour intensive than conventional systems - for example, in terms of manual pest management and crop diversification - it opens up employment opportunities for local people. It can also increase the economic strength of local communities and reduce urbanisation, as rural populations do not need to seek jobs in cities (Williams & Patterson, 2010) .

Fourth, organic farming can improve long-term economic resilience by helping to safeguard natural resources, such as soil and water. By adopting more environmentally friendly practices such as crop rotation and the use of cover crops, soil fertility and water quality can be maintained, thus preventing environmental degradation that could become an economic burden in the future. It also supports agricultural diversification which can strengthen economic resilience in the face of climate change (Turner, 2017) .

Finally, organic farming allows farmers to participate in various certification programmes and direct-to-consumer sales, such as farmers' markets and vegetable box schemes. In this way, farmers can cut the long distribution chain and earn higher profit margins by selling directly to consumers who appreciate the value and quality of organic products (Mia & Shamsuddin, 2010) . This not only increases farmers' income but also builds a closer relationship between producers and consumers, which in turn can improve overall economic stability.

Environmental Benefits of Organic Farming

Organic farming significantly contributes to environmental health and sustainability by adopting environmentally friendly practices. Firstly, organic farming reduces soil and water pollution because it does not use synthetic chemical pesticides and fertilisers. This reduces the risk of harmful chemical residues flowing into water sources, which can damage aquatic ecosystems and threaten wildlife. By maintaining water quality, organic farming helps protect human communities and other ecosystems from harmful chemicals (Jones, 2015) .

Secondly, organic farming methods contribute to improved soil fertility. By practising techniques such as crop rotation, use of compost, and planting cover crops, organic farming helps to improve soil structure and increase its organic matter content. Healthier soil means better water retention ability and less erosion, which in turn maintains long-term soil productivity (Webster & Watson, 2002) .

Third, organic farming supports biodiversity by promoting a more diverse and stable environment. By reducing or eliminating the use of pesticides, insects, birds and other animals can breed more freely, enriching the biodiversity around the farm. Practices such as mixed cropping and crop rotation also increase the variety of plant species, which attracts a wide variety of fauna and flora to live and thrive around the farm (Watson & Atkinson, 2008) .

Fourth, organic farming plays a role in climate change mitigation by reducing greenhouse gas emissions. Synthetic chemical production processes usually involve high emissions, while organic farming minimises the use of such chemicals. Furthermore, organic farming systems can increase soil carbon sequestration through increased soil organic matter content. Thus, organic farming helps in global efforts to reduce the impact of climate change (Davis, 2014) .

Finally, organic farming supports ecosystem sustainability by promoting practices that strengthen ecosystem health. Natural pest management and soil conservation as part of organic practices help maintain balanced ecosystems, reduce habitat destruction, and increase resource availability for future generations. With a focus on integrating nature and human productivity, organic farming offers a more holistic approach to natural resource management that makes it more sustainable for the future.

Social Benefits of Organic Farming

Organic farming not only benefits the environment, but also has significant social benefits. Firstly, organic farming improves public health by providing food products that are safer and free from pesticide residues. Consumption of organic products that are free from synthetic chemicals can reduce the risk of diseases related to exposure to harmful chemicals, such as cancer, hormonal disorders, and other chronic diseases. Thus, organic farming contributes to improving the quality of life and well-being of the community (Martinez & Santiago, 2001) .

Second, organic farming often supports local economies and strengthens rural communities. Small businesses and family farms that focus on organic production can provide jobs and support the local economy. The market for organic products usually provides better prices for farmers, which means a more stable and fair income. Thus, organic farming can have a positive impact on the economy of surrounding communities, reduce poverty, and improve living standards (Smith, 2020) .

Third, organic farming strengthens the relationship between producers and consumers through an emphasis on transparency and sustainability. Consumers interested in organic products tend to be more engaged and aware of the production process of the food they consume. This encourages direct interaction between farmers and consumers, for example through local markets and Community Supported Agriculture (CSA) programmes. These stronger relationships not only build trust but also provide consumers with greater opportunities to support sustainable and ethical agricultural practices (Hardman, 2020) .

Fourth, organic farming promotes education and environmental awareness. With the growing interest in organic farming, many educational programmes and initiatives are being established to teach sustainable farming practices and the importance of maintaining a healthy environment. Schools, communities, and non-governmental organisations play an important role in disseminating this knowledge, shaping a generation that is more environmentally aware and able to make better decisions for the future (FiBL & IFOAM - Organics International, 2020) .

Finally, organic farming supports food security and long-term sustainability. Organic farming practices, such as crop diversification and soil fertility maintenance,

help ensure that the soil remains productive and capable of producing food in the long term. This is important in the face of global challenges such as climate change and population growth. By supporting organic farming, communities can contribute to a more stable and sustainable food system that not only meets current needs but also maintains environmental and social well-being for future generations.

Conclusion

Organic farming brings significant benefits in promoting sustainable food security. First of all, by relying on farming techniques that are environmentally friendly and free from synthetic chemicals, organic farming helps maintain ecosystem health and soil fertility. Methods such as crop rotation, the use of organic fertilisers, and natural pest control ensure that the soil remains productive and nutrient-rich, which is crucial for long-term food security. Moreover, organic farming also reduces pollution and negative impacts on the environment, which is a crucial aspect in achieving sustainability.

Second, organic farming has an important role in supporting local economies and strengthening rural communities. By providing fairer returns to farmers and creating jobs, organic farming helps reduce poverty and improve community well-being. The strong relationships between producers and consumers built through organic practices also promote transparency, trust, and support for local economies. These economic factors promote social stability and food security at the community level, which is more difficult to achieve with large-scale conventional farming models.

Finally, organic farming promotes education and awareness about sustainable practices among both farmers and consumers. The growing educational initiatives around organic farming are helping to create a generation that is more environmentally conscious and understands the importance of maintaining food security for the future. As such, organic farming not only provides an effective solution to current food security issues but also prepares society to face future global challenges, such as climate change and rising food demand. All these benefits make organic farming an important pillar in creating a sustainable and equitable food system.

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