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# A Comparative Analysis of Synthetic Farming and Organic Farming in India with Reference to Right to Food

K M Nanditha<sup>1</sup>, Jyothi Vishwanath<sup>1</sup>

<sup>1</sup> Assistant Professor, University Law College and Department of Studies in Law, Bangalore University, Bengaluru, Karnataka, India

## Abstract

*In India, Right to food is an implied fundamental right protected by Article 21 of the Indian Constitution. The obligation of the State to ensure the people's right to food must be interpreted and understood in terms of availability, accessibility, adequacy, and sustainability. That is, right to food does not mean mere fulfillment of food rather includes nutritious and healthy food. However, the Green Revolution of the 1960s, which adopted synthetic farming made our country self-sufficient and brought in a radical period of speedy food grains in particular. Synthetic fertilizers also contributed as a trigger for revolution. Despite the fact that this farming technique may have saved the day, but it is hardly a sustainable one. It created issues with soil, plant, and overall environment; led to a poor diet and had an adverse impact on public health. Therefore, in this view, this research carries out a comparative analysis of the Synthetic and Organic farming systems in order to bring out the suitable farming system to put into practice in India, with the primary objective of assuring nutritious and healthy food for everyone. As of March 2020, according to the Union Ministry of Agriculture and Farmers' Welfare, barely 2% of the country's net sown area is under organic cultivation. That is, why India is striving to phase out Synthetic farming. As a result, the research paper emphasizes various challenges in adopting Organic farming and delineates Governmental Schemes that support the farmers in India in adopting organic farming in order to ensure the fundamental right to food.*

**Keywords:** Right to food; Nutritious; Sustainability; Synthetic Farming; Organic Farming; Governmental Schemes

## 1. Introduction

Are we consuming safe food? In the current situation, the answer needs to be examined a hundred times. A fundamental right to food under Article 21 of the Indian Constitution recognized by the court through its landmark judgment makes the state obliged to protect its people from hunger.<sup>(1)</sup> But again, the degree

of protection for individuals is subject to discussion. It is important to comprehend the scope of protection in terms of the fundamental elements of the right to food. That is, in order to protect a person's fundamental right to food, efforts must be made to increase food availability and accessibility, as well as to provide adequate and sustainable food. This is due to the fact that food, when considered in

terms of rights, also requires the fulfillment of nutritious food that promotes the long-term sustainability for human life. While interpreting Article 21 of the Indian Constitution, Justice Bhagawati emphasized that the right to life implies the right to live with human dignity and everything that comes with it, namely the basic needs of life, which also include adequate nutrition.<sup>(2)</sup> Therefore, merely having access to food does not guarantee that it is adequate or sustainable. Ensuring said right to the utmost extent is possible through the system of organic farming which is essentially opposed to the use of synthetic components. As to basic idea of organic farming is not just about employing certain practices and components while avoiding others; it is a kind of farm whose structure is modeled after the structure of a natural system, which has the integrity, independence, and healthy dependency of an organism.<sup>(3)</sup>

## 2. Food as a Fundamental Right

Life, according to Justice Field, is not just an animal existence; it is something more,<sup>(4)</sup> and together with the fact that a person is born, human rights exist. There is a connection between life and human rights which are Universal, indivisible, interdependent and interrelated.<sup>(5)</sup> To call it a proper or adequate living, all the basic human needs like food, shelter, water, health and other necessities, must be met to the greatest extent possible. Life and food are interdependent and inalienable right. Completeness of life depends on the fulfillment of human rights which are considered something 'Fundamental'.

Several international instruments recognize the right to food as a fundamental aspect of life. The Universal Declaration of Human Rights (UDHR), adopted in 1948, recognizes the right to food as a part and parcel of an adequate standard of living. It states that adequate living is ensured upon the fulfillment of food to a person and his family.<sup>(6)</sup> The International Covenant on Economic, Social, and Cultural Rights (ICESCR), which was established in 1966, provides two perspectives from which a right to food must be implemented. Firstly, it is an obligation of the State to ensure a standard of living by providing adequate food.<sup>(7)</sup> Secondly, as a fundamental right, everyone has the right to be free from hunger and malnutrition.<sup>(8)</sup> This is from here; the right to food a basic human right receives its fundamental character.

Additionally, the General Comment 12 on the right to adequate food by the Committee on Economic, Social, and Cultural Rights in its Twentieth Session, 1999, while interpreting Article 11 of the ICESCR, states that 'availability' and 'accessibility' are core components of the right to adequate food and are further connected with 'adequacy' and 'sustainability'. Similarly, the United Nations Office of the High Commissioner for Human Rights (OHCHR) focuses primarily on components of the right to food, like the CESCR, which includes the availability, accessibility, adequacy and

sustainability of food.

**Availability :** A person's ability to feed themselves directly from productive land or other natural resources is referred to as availability. It also refers to the possibility of efficient distribution, processing, and market systems that can move food from the location of production to the location where it is required based on demand.

**Accessibility :** It includes both economic and physical accessibility. Economic accessibility suggests that the costs connected with obtaining food for an adequate diet should be at a level such that the satisfaction of other fundamental needs is not jeopardized or undermined. Whereas everyone, including physically vulnerable people like infants and young children, the elderly, the physically disabled, those who are terminally ill, those who have ongoing medical conditions, including those who are mentally ill, victims of natural disasters, those who live in disaster-prone areas, and other particularly disadvantaged groups, must have access to adequate food, according to the notion of physical accessibility.

**Adequacy :** The concept of adequacy is especially important because it highlights several criteria that must be addressed in deciding whether particular food or diets that are available can be considered the most appropriate under given conditions. Here, 'diet' refers to a combination of nutrients for physical and mental growth, development, and maintenance, as well as physical activity that is in accordance with human physiological needs at all phases throughout the entire lifespan well according to gender and occupation. Besides that, dietary composition shall not be impacted by changes in the supply of food or the ease of access to it. It must be free of harmful substances and prevent food from being contaminated at various levels during the food chain by adulteration, poor environmental hygiene, or improper handling.

**Sustainability :** The idea of adequate food, also known as food security, implies that there will be enough food for both the present and the generations to come. Long-term availability and accessibility are concepts that are included in sustainability.

India, as an active member of the United Nations and a state party to the ICESCR, has an international obligation to respect, protect, and fulfill its people's right to food. The right to food is not expressly stated as a fundamental right in Part III of the Indian Constitution. However, the Preamble of the Indian Constitution which speaks about equality, dignity, social and economic justices impliedly deal with the right to food. Furthermore, it is an outcome of judicial activism, as the court recognized the right to food as a fundamental right enshrined in Article 21 of the Indian Constitution, which includes food as a basic necessity of life to live with human dignity, in its landmark decision in the case of *People's Union for Civil Liberties v. Union of India*. Freedom from Starvation is as important as right to life.<sup>(9)</sup> Therefore, the state is obliged to make sure that no one dies from hunger, starvation, or



malnutrition; in case of failure, this is a violation for which the state is held accountable.

### 3. India's system of farming

India is a world agricultural powerhouse. According to the Food and Agricultural Organization (FAO) of the United Nations, India is currently placed as the world's second-highest agricultural producer. Out of 60.2% of total agricultural land, 52.26 % of arable land is used for food production as of 2020.<sup>(10)</sup> All credit for such development goes to the Green Revolution<sup>(11)</sup> of the 1960s which adopted the practice of synthetic farming and brought a significant increase in the production of food grains. High yielding varieties were used at this time. The change was sparked by synthetic fertilizers. These fertilizers are derived from chemicals such as ammonia, natural gas, atmospheric nitrogen, phosphate minerals, sulfur, and inorganic waste materials. NPK (nitrogen, phosphorus, potassium) fertilizers were applied to plants in greater quantities, resulting in faster growth and higher productivity, as well as the use of insecticides and pesticides for pest control. This caused the nation to transition from a food shortage to self-sufficiency, which also led to an increase in exports and economy.

Through increased food productivity, the revolution aided in achieving the key component namely availability. Furthermore, it is made accessible to people through government initiatives, where the Food Corporation of India (FCI) plays a significant role in the storage of food grains and the Public Distribution System governed by the National Food Security Act, (NFSA) 2013 entitles up to 75% of the rural population and 50% of the urban population to receive subsidized food grains through the Targeted Public Distribution System. It serves approximately two-thirds of the population through various schemes such as Antyodaya Anna Yojana (AAY), Integrated Child Development Service (ICDS) Scheme and Mid-Day Meal Scheme.<sup>(12)</sup> But there is a concern about the adequacy and sustainability of food. Although the revolution may have saved the day; it was at the cost of soil and plant health and has a negative impact on the environment and human health by leading to a poor diet.

As per Global Hunger Index 2022, India is ranked 107<sup>th</sup> out of 121 countries with a score of 29.1 which indicates a serious level of hunger. Proportion of undernourished in population is 16.3 (insufficient caloric intake), Child stunting rate is 35.5 (chronic under nutrition), Child wasting rate is 19.3 (acute under nutrition) and child mortality is 3.3 (due to inadequate nutrition and unhealthy environments).<sup>(13)</sup> In terms of food security, India is ranked 68<sup>th</sup> out of 113 countries, with a total score of 51.2, according to a recent report. Score of quality and safety of food and its sustainability is 59.3 and 58.9 respectively.<sup>(14)</sup> According to a UNICEF report, 69% of children under the age of five died in 2018 as a result of malnutrition.<sup>(15)</sup> Besides this, a study from 1999 –

2017 published in the Lancet Journal found that India's poor diet causes hundreds of deaths every year. India was ranked 118<sup>th</sup> out of 195 countries, with 310 deaths per 100,000 people in 2017.

According to available statistics, a poor diet is the result of a revolution that has been practicing synthetic farming for several years. From this point of view, India's farming system requires an immediate transition from synthetic to 'organic'. Organic farming comes after natural farming which is opposed to the use of inorganic or chemical components. In the words of Nicolas Lampkin, "Organic Agriculture is a production system, which avoids or largely excludes the use of synthetic compounded fertilizers, pesticides, growth regulators and livestock feed additives".<sup>(16)</sup> In order to maintain the health of the soil and the plants, it involves a process of adding nutrients back into the soil through crop residues, compost, green manure, bio gas slurry, animal and human excreta, vermicompost and bio fertilizers (such as Blue Green Algae, *Azotobacter*, *Azospirillum*, *Rhizobium*, *Azolla*, *Frankia* and *Mycorrhiza*). It also adopts mixed farming and crop rotation. The main principle of organic farming, according to the International Federation of Organic Agriculture Movements, is to protect the soil, plants, animals, human, crops, living organisms and the environment as a whole.

Essentially, plants need 13 nutrients. NPK are regarded as macronutrients that are essential primarily for plant growth. Sulfur, magnesium and calcium are the secondary nutrients. These nutrients are generally available in the soil. Boron, copper, iron, chloride, manganese, molybdenum, and zinc are additional micronutrients.<sup>(17)</sup> Farmers increased yields in a shorter period of time by using macro fertilizers (NPK) for a number of years because these fertilizers are water-soluble and contain nutrients that are readily available and can be absorbed by plants almost immediately. However, continued NPK use caused the soil to become less fertile and the plants to lack nutrients, which reduced the nutritional content of the food grains produced. It becomes challenging for the soil and plant to defend themselves against pests and insects once their resistance is lost. Additionally, this led to increased use of plant protection chemicals, which killed beneficial microorganisms necessary to maintain soil fertility. This also contaminates good grains.

The quality of food is linked to the life of the soil and plants. This can be accomplished through organic farming, which restores the fertility of the soil and plants grow optimally when organic fertilizers are used because they naturally receive both macro and micronutrients. It boosts the number of microorganisms needed to keep the soil fertile, helps to hold water better and requires less irrigation. These microbes also play a vital role in converting organic fertilizers into nutrients that plants can intake. When plants and soil become efficient, they gain the ability to defend themselves against pests and insects. Organic fertilizers typically have a



lower NPK ratio, which causes plants to observe nutrients more slowly. But because crop rotation takes the necessary time and helps soil and plants retain their character and sustainability, thus it produces quality and nutritious food grains while limiting the use of macro fertilizers for crop production and environmental destruction. In the present situation, organic farming is a viable system of practice when compared to synthetic farming. It is a recycling process that safeguards our mother soil, thereby fostering the development of potential plants and adequate as well as sustainable food. India must therefore switch from synthetic to organic farming to produce adequate and sustainable food.<sup>(18)</sup>

#### 4. Governmental Schemes to Promote Organic Farming

In recent years the government has brought a change in the farming system through its various schemes. The main goal of the Schemes is to encourage farmers to switch to organic farming by offering subsidies and by making bio fertilizers more widely available, to lessen their overall reliance on chemical fertilizers in order to guarantee quality and sustainability. Two dedicated programmes, Paramparagat Krishi Vikas Yojana (PKVY) and Mission Organic Value Chain Development for Northeast Region (MOVCD), were launched in 2015 to encourage chemical-free farming with the goal of assisting farmers to adopt organic farming. Farmers receive financial assistance of Rs 31000/ha/ 3 years under PKVY and Rs 32500/ha/ 3 years under MOVCDNER for organic inputs such as seeds, bio-fertilizers, bio-pesticides, organic manure, compost/vermicompost, botanical extracts, and so on. The scheme also promotes organic farming in clusters with PGS (Participatory Guarantee System) certification, Farmers Producers Organization (FPO) formation, training, and marketing.

Since 2020-21, the Bhartiya Prakritik Krishi Padhati (BPKP), a sub-scheme of the Paramparagat Krishi Vikas Yojana (PKVY), has promoted traditional indigenous practices. The scheme focuses on eliminating all synthetic chemical inputs and promoting on-farm biomass recycling, with a particular emphasis on biomass mulching, the use of cow dung-urine formulations and plant-based preparations. Under the BPKP, financial assistance of Rs. 12200/ha/ 3 years is provided for cluster formation, capacity building and continuous hand holding by trained personnel, certification, and residue analysis.

The National Food Security Mission (NFSM) Scheme, which was launched in October 2007, provides financial assistance for the promotion of bio-fertiliser (Rhizobium/PSB) at 50% of the cost, up to Rs 300 per hectare.

National Mission on Oilseeds and Oil Palm (NMOOP) provides financial assistance at a 50% subsidy to the tune of Rs. 300 per hectare for various components such as bio-

fertilizers, the supply of Rhizobium culture, Phosphate Solubilising Bacteria (PSB), Zinc Solubilising Bacteria (ZSB), *Azotobacter*, *Mycorrhiza*, and vermicompost.

The Soil Health Management Scheme (SHM) included the introduction of the Capital Investment Subsidy Scheme (CISS). Under this scheme, state governments and government agencies receive complete assistance in setting up mechanized fruit and vegetable market waste production units, with a cap of Rs 190 lakh per unit (3000 Total Per Annum TPA capacity).<sup>(19)</sup>

#### 5. Challenges and Suggestions

As of March 2020, according to the Union Ministry of Agriculture and Farmers' Welfare, barely 2% of the country's net sown area is under organic cultivation. Despite the reality that organic farming ensures an adequate and sustainable farming mechanism, India is still in the early stages of adoption. What is it that is impeding our farmers? Several factors cause to avoid organic farming. They are low productivity, time-consuming, higher cost, decreased income, unavailability of inputs, lack of awareness about the process and benefits, market problems and pest control difficulty.

Land resources can easily switch from organic to synthetic farming, but not the other way around. This makes the adoption very challenging. However, it would not be correct to say that organic farming results in low productivity. For several years now, synthetic fertilizers have been used to boost productivity. As a result, the soil is no longer fertile, and the plants have become dependent on limited nutrients. When organic inputs are used in such a situation, all of the macro and micronutrients are absorbed by the soil and plants, resulting in low yield and decreased income. Initial crop loss that typically happens because it takes three to four years for it to retain its character and have biological control, but it ensures that food grains, plants, and soil are nutritious and sustainable and cut down future cost. Further, pest control involves more than just chemical spraying like in synthetic farming. The technique includes intercropping, using pests like ladybugs or mites to fight pests, rotating crops to prevent pests from becoming accustomed to the types of plants and using organic pesticides. This is more convenient and economical. Therefore, the government must take the initiative to educate farmers about the organic farming mechanism and its advantages through various programmes and provide training.

When synthetic fertilizers are used, results are visible within the first two weeks and a 90-day yield is anticipated. But the yield is received for nearly 150 days under organic farming; people who rely only on profits do not want to switch to organic farming. Considering that government must enact regulatory laws. Local distribution channels must be developed by the government. High-quality control vehicles require be used in the absence of a suitable market, which



increases the cost and makes it challenging for small and marginal farmers to enter the market without sufficient government support. Further, the government must take measures to increase the organic inputs stock and make them available.

## 6. Conclusion

Organic Farming is a key to achieving the fundamental right to food which ensures the core component of availability, adequacy, and sustainability. It is a recycling process that creates nutritious soil, plants, and food while preserving it for the future. Experiencing a serious level of food security now is the time to go organic. The Prime Minister Narendra Modi said that “organic farming is an important path to make India ‘Atma Nirbhar’ (self-reliant). Chemical-free farming and organic farming is our duty and can add to the strength of the country”. Therefore, it is an obligation upon the State to uphold the right to food a fundamental right to the greater extent.

## References

- 1) People's Union for Civil Liberties v. Union of India, Public Interest Writ Petition (Civil) No. 196 /2001. . Available from: <https://indiankanoon.org/doc/411836/>.
- 2) Francis Coralie Mullin v. Union Territory of Delhi, AIR 1981 SC 619. . Available from: <https://indiankanoon.org/doc/78536/>.
- 3) Berry W, editor. The Gift of Good Land: Further Essays Cultural and Agricultural. Washington DC, USA. Counterpoint. 2009. Available from: [https://books.google.co.in/books/about/The\\_Gift\\_of\\_Good\\_Land.html?id=BdK5QgAACAAJ&redir\\_esc=y](https://books.google.co.in/books/about/The_Gift_of_Good_Land.html?id=BdK5QgAACAAJ&redir_esc=y).
- 4) Munn v. Illinois, 24 L Ed 77; 94 US 113 (1877). 1877. Available from: <https://supreme.justia.com/cases/federal/us/94/113/>.
- 5) United Nations Vienna Declaration of 1993, Programme of Action, p.3, Para 5. . Available from: <https://digitallibrary.un.org/record/183139?ln=en>.
- 6) Article 25, Universal Declaration of Human Rights, 1948. . Available from: [https://www.nlm.nih.gov/exhibition/againsttheodds/pdfs/guide/human\\_rights\\_statements.pdf](https://www.nlm.nih.gov/exhibition/againsttheodds/pdfs/guide/human_rights_statements.pdf).
- 7) Article 11(1), International Covenant on Economic, Social and Cultural Rights (ICESCR), 1966. . Available from: <https://nhrc.nic.in/sites/default/files/International%20Covenant%20on%20Economic%20Social%20and%20Cultural%20Rights.pdf>.
- 8) Article 11(2), International Covenant on Economic, Social and Cultural Rights (ICESCR), 1966. . Available from: <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-economic-social-and-cultural-rights#:~:text=Article%2011,-1.&text=1.-,The%20States%20Parties%20to%20the%20present%20Covenant%20recognize%20the%20right,continuous%20improvement%20of%20living%20conditions>.
- 9) Kesavananda Bharati v. State of Kerala, AIR 1973 SC 1762. . Available from: [https://en.wikipedia.org/wiki/Kesavananda\\_Bharati\\_v.\\_State\\_of\\_Kerala](https://en.wikipedia.org/wiki/Kesavananda_Bharati_v._State_of_Kerala).
- 10) The World Bank Report, November 2022. . Available from: <https://www.worldbank.org/en/publication/wdr/wdr-archive>.
- 11) Gupta HM. Organic Farming and Sustainable agriculture;vol. 24. 1st ed. Jaipur, India. ABD Publishers. 2005. Available from: [https://books.google.co.in/books/about/Organic\\_Farming\\_And\\_Sustainable\\_Agricult.html?id=47R9PgAACAAJ&source=kp\\_book\\_description&redir\\_esc=y](https://books.google.co.in/books/about/Organic_Farming_And_Sustainable_Agricult.html?id=47R9PgAACAAJ&source=kp_book_description&redir_esc=y).
- 12) Department of Food & Public Distribution, Government of India, National Food Security Portal. . Available from: <https://dfpd.gov.in/>.
- 13) The Power of Youth in Shaping Food Systems. . Available from: [www.globalhungerindex.org](http://www.globalhungerindex.org).
- 14) The 11th Global Food Security Index Report. 2022. Available from: <https://education.sakshi.com/en/current-affairs/international/2022-global-food-security-index-report-121983>.
- 15) The United Nations Children's Fund (UNICEF) Report: 'State of the World's Children'. 2019. Available from: <https://www.unicef.org/reports/state-of-worlds-children>.
- 16) Palaniappan SP, Annadurai K. Organic Farming: Theory and Practice;vol. 11. 7th ed. India. Scientific Publishers. 2018. Available from: [https://books.google.co.in/books/about/Organic\\_Farming\\_Theory\\_Practice.html?id=1X6MDwAAQBAJ&source=kp\\_book\\_description&redir\\_esc=y](https://books.google.co.in/books/about/Organic_Farming_Theory_Practice.html?id=1X6MDwAAQBAJ&source=kp_book_description&redir_esc=y).
- 17) NSW Government: Department of Primary Industries. . Available from: [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au).
- 18) Interview with Dr. T.M. Ramanappa, Senior Scientist (Plant Breeding), National Seed Project (NSP), Krishi, Vignana Kendra, Bengaluru, Karnataka. 2022.
- 19) Promotion of Organic Farming, Ministry of Agriculture & Farmers Welfare. 2022. Available from: <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1946809>.

