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## Original Research Article

# Impact of organic farming in environmental protection and cleanliness

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### ABSTRACT

Environment is one of the most important components of our society as it not only affects us in the present but its nature and composition will also have a huge impact on our children and forthcoming future generations. At the same time, it is also a heritage provided to us by our ancestors so it becomes a huge responsibility of ours to protect it for the well-being of living organisms. Now-a-days, organic farming is gaining significant attention owing to its advantages in maintaining the fertility of soil, conservation of non-renewable resources utilized in generation of agro-chemicals, environment protection, improved food quality and sustainable agriculture. This can not only improve quality and living standards of lives but at the same time can prevent the extinction of various other species of organisms. Here, in this paper we are going to discuss the role of organic farming in cleanliness of environment and its protection so that we can ensure the availability of healthier environment for future generations.

## 1. Introduction

The importance of the healthy environment makes it an important constituent element of our culture and society. Environment is one of the most important components of our society as it not only affects us in the present but its nature and composition will also have a huge impact on our children and forthcoming future generations [1]. At the same time, it is also a heritage provided to us by our ancestors so it becomes a huge responsibility of ours to protect it for the well-being of living organisms. Keeping environment clean is not that hard and impossible as it just requires few simple actions of our day-to-day life which on aggregation for the society will surely make a huge impact on environment health when observed for longer period. This can not only improve quality and living standards of lives but at the same time can prevent the extinction of various other species of organisms. There are a lot of small changes in our habits/activities which can have a large impact on environment when applied on masses and for longer periods. Organic farming involves the collective practices undertaken for growing crops/plants under natural environment by replacing the use of chemical loaded synthetic fertilizers and pesticides in conventional farming with their organic counterparts synthesized using organic matter from plants and animal origin [2]. It also involves the use of some well-known good practices of farming like crop-rotation, inter-cropping, symbiotic associations, cover crops, organic fertilizers and pesticides etc. among various others. These practices not only known for increasing the retention abilities of the soil for the water content and nutrients but also for the formation of more stable and aerated soil structures by increased number of microflora and fauna [3]. Owing to the potential of increasing biodiversity, organic farming is considered as an asset for achieving sustainability goals [4]. Here, in this paper we are

going to discuss the role of organic farming in cleanliness of environment and its protection so that we can ensure the availability of healthier environment for future generations.

## 2. Conventional farming

Conventional farming practices involves growing single crops as economically as possible with optimum yields by uniform application of various mineral supplements in the form of fertilizers, pest controlling chemicals, i. e. pesticides and irrigation water while ignoring the differential heterogeneous requirements of soil and crop from different parts of the fields. Green revolution further empowered the conventional agriculture in achieving higher yields with the availability of high yielding seeds, mechanized farming tools, a large variety of fertilizers and pesticides on subsidized rates and good irrigation facilities.

## 3. Impact of organic farming on environment

Although, the conventional farming practices are aimed at producing higher yields and prove economical for the farmer at present. However, these practices are not sustainable in the long run owing to their deleterious effects on environment by polluting soil, water and air [5]. The over application of various resources and chemicals will overload the soil with chemical toxins thereby changing the fertile soils into bare lands. The excessive application of chemical fertilizers also lowers the organic matter content of the soil which further reduces its water holding capacity and eases the erosion of soil which is the major cause of water and soil pollution. Besides degrading the soil health, the excessive input of chemicals in the form of fertilizers and pesticides is also degrading the environment as a result of emissions of greenhouse gases, and also the human



health due to the presence of these chemicals in eatable vegetables, fruits and grains.

These chemicals on entering the living organisms including humans cause severe damage to the functions of various organs thereby generate a diseased state.

#### 4. Organic farming

Organic farming involves a collection of farming practices aimed at growing plants in sustainable and eco-friendly manner excluding the use of chemicals in the form of fertilizers and pesticides and using organic wastes from crops, animals, aquacultures and beneficial microbes for recycling nutrients to soil [6]. Crop-rotation, inter-cropping, symbiotic associations, and cover crops are some of well-known practices undertaken in organic farming for optimizing the crop yields and soil health.

#### 5. Management practices in organic farming

**Practices for maintaining Soil Fertility and Composition:** The soil is the foremost factor which determines the output of farming practices. The necessity of highly fertile soil further increases in organic farming as we avoid addition of inorganic fertilizers in such farming which are known to immediately increase the availability of soil nutrients. Therefore, in organic farming we should focus on maintaining and retaining the good soil health for longer time which play key role in sustainability. The fertile soil must contain sufficient amounts of chemical nutrients - both macronutrients (nitrogen, phosphorus, calcium, sulfur and potassium) and micronutrients (boron, zinc, manganese, iron, copper, molybdenum and chlorine), suitable pH, organic matter, good in micro-organisms (Figure 1). Among these, soil micro-organisms play pivotal role in maintaining the soil fertility by not only recycling the nutrients from crop residues but also by making symbiotic associations with crop plants. In order to ensure the availability of these microbial population in the soil, organic farmers must adhere to some farming practices which include crop rotation, growing legumes, proper tillage practices, application of green manure and other organic fertilizers. Suitable tests of the soil should be made which tell us about availability of these nutrients, pH and organic matter and farming methods which destroy soil microbes and increase soil erosion must be avoided for ensuring soil fertility [7].

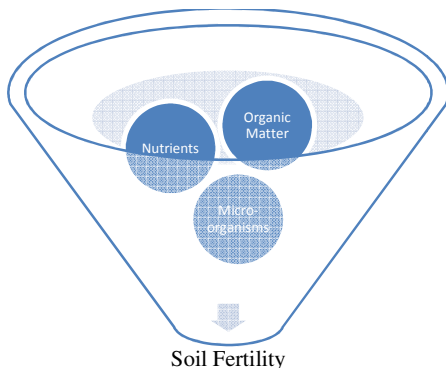


Figure 1: Factors Determining Soil fertility in Organic Farming

**Impact of Seeding** The selection of suitable seeds, time of seeding and seeding rate are important parameters for good crop emergence from farmland with minimum weeds growth.

Although these mentioned parameters are further determined depending upon the soil structure and composition, local environment and need of the farmer. The seeding equipment also affects the crop emergence. Some of the commonly used seeding equipment used by organic farmers include valmar spreader, disk seeder, air seeder and double disk press drill among various others.

**Weed Management** The weed management play very important role in ensuring the availability of nutrient to crop plants. The selection of proper time of cultivation/seeding is also known to have significant impact in weed management. Some farming practices such as crop rotation also help in eliminating the seasonal weeds of some crops. Besides above, some physical practices are also used for weeds management which include mulching and propane flame burning [8]. The mulching not only helps in weeds removal but also increases soil porosity, water holding capacity, microbial population and cation exchange ability of soil making it more fertile.

#### 6. Benefits of organic farming

The major advantage of organic fertilizers over inorganic chemical fertilizers is their ability to allow for the slow and gradual release of nutrients over a longer period of time which increases the bioavailability of these nutrients for crops/plants. The burst release of nutrients from inorganic chemical fertilizers provides lower time for the cultivated crops/plants for their absorption causing the seeping of some nutrients into the deeper soil and water table while escape of some nutrients in the form of gases into the atmosphere where they become unavailable for the cultivation and at the same time pollute our water and air resources. Besides these, the sudden release of nutrients via chemical reactions also causes abrupt change in the pH of the soil, which may cause harm to many beneficial micro-organisms in the soil thereby degrading the soil health. Although, the technology and green revolution driven conventional agriculture have helped us in achieving high yields of produces but at the cost of severe damage to the environment while the organic farming is a way of sustainable agriculture which not only maintains soil health and composition by sequestering carbon but also consumes less water and energy, preserves environment and prevents the harmful effects of synthetic chemicals as fertilizers/ pesticides/ weedicides [9-10]. Thus, it becomes the demand of the time to adopt organic farming at least partially so that we can ensure the availability of good agricultural land for future generations.

#### 7. Challenges of organic farming

1. Lack of awareness among farmers about organic farming and its benefits
2. Unavailability of fertile and biomass rich soil for organic farming
3. Improper knowledge about certification of organic products and assurance of sell of organic produce at premium prices
4. Unavailability of organic fertilizers and pesticides at subsidized rates
5. Lack of knowledge about self- preparation of these organic fertilizers and pesticides.

## 8. Impact of organic farming on environment

Since Organic farming maintains good carbon content of the soil, which prevents soil erosion and thus reducing the soil and water pollution. Organically grown produces (fruits, vegetables and grains) are healthier for humans and other organisms owing to their non-exposure to toxic chemicals in the form of fertilizers and pesticides. The application of organic fertilizers also causes the release of some amount of greenhouse gases to the environment which needs to be controlled.

## 9. Highlights of Indian agriculture policy for sustainable development

1. Agriculture policy in India aims to attain the sustainable growth of agriculture by promoting environmentally non-degrading, economically benign, technically astonishing, socially acceptable use of our natural resources-land, water, biomass etc.
2. A huge emphasis is given on running a nation -wide awareness program for utilization of farm residues, organic wastes from households and various water and sewage treatment plants.
3. Focus has been given for conjunctive use of organic and inorganic fertilizers for achieving higher agricultural production.
4. Use of integrated nutrient management (INM) and integrated pest management (IPM) techniques is emphasized for achieving higher yields as these require controlled use of agro-chemicals.

## 10. Conclusions

It seems mandatory in present scenario to maintain a clean environment. We should educate our children and society to reduce the use of toxic materials, recycle waste products, conserve water and energy, dispose of garbage properly, purchase recycled products, invest in green energy and drive fuel-efficient cars with reduced carbon dioxide emissions so as to protect our environment for future generations. The transition from conventional farming towards the organic farming is the need of present time for improving the soil health which will not only sustain the agriculture for longer period but on prolonged application will also result in improved crop yields. This transition can be initiated by slowly reducing the chemical input, increasing the application of organic fertilizers/ pesticides, integrating the pest management and increasing the biodiversity which might be achieved by planting more and more trees on agricultural land and growing crops in-between. Planting more and more trees on the agricultural land will not only help in regulating the soil, water and air quality but will also help in efficient nutrient cycling and control of various pests thereby creating a suitable local microenvironment around the crops. [10-12]

Initially, while going through this transition towards sustainable agriculture, the production yield of crops might be lower which discourages farmers from adopting the organic farming route. However, this can be worked out by adopting these measures on lower scales and then moving towards higher ones and in stepwise manner. The awareness programmes, subsidies for adopting these organic farming

practices and higher prices for organically grown produces will be highly fruitful and could help us in protecting our environment and human generation/other organisms from the very harmful effects of the chemicals used in the form of fertilizers/ pesticides/ weedicides etc.

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