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Promotion of Organic Farming: Roles of Key Players

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Abstract

Organic farming relies mostly on on-farm resources and excludes use of off-farm resources. Its' primary goal is to optimize the health and productivity of interdependent communities of soil, plants, animals and people. It reduces exposure to pesticides and other synthetic chemicals. It helps in maintaining healthy soil, combating erosion, fighting the effects of global warming and climate change. However, there is a large gap between what to do and what is required. Hence, there is a need to map the responsibilities of various stake holders involved in practising and (or) promoting organic farming.

Introduction

Agriculture continues to play a greater role in the economic development of India as it supports 15% towards national GDP and more than 50% of population. Modern Agriculture though helped to enhance the productivity; yield in many crops is showing a plateau (Figure 1). Besides, it also led to soil erosion, environmental degradation, declining soil fertility and crop and factor productivity, depletion of natural resources, pollution of soil, water and air. Further, soil and food quality is declining over the years. Due to indiscriminate use of pesticides, pests are developing resistance to pesticides and the pesticide residues are being detected in agricultural and dairy products. Agriculture remains a major source of water pollutants and water quality degradation. The soil, food products and underground waters have been found to be contaminated with pesticide residues. Further, inorganic fertilizers and other agro-chemicals when used indiscriminately do show negative effects on soils and plants. Adding high doses of N-fertilizers in modern agriculture without the use of organic manures leads to humus depletion and fall in crop production. When high levels of N-fertilizers especially nitrate forms are applied to soil, nitrate pollution of drinking water is a serious health hazard. Alarming issue to human health is regular use of phosphatic fertilizer in large quantities often causes the build-up of trace metal contamination such as arsenic, fluoride, cadmium etc. in soil and plants. These toxic contaminants reach the human body, through food chain and cause health problems. The water soluble nutrients when carried to lakes and stream through leaching and surface run off cause eutrophication as manifested by the luxuriant growth of algae and other water weeds on the water surface leading to oxygen deficient condition. This situation is not conducive to healthy aquatic life. On the other hand, demand for products with quality attributes has given rise to a movement called the organic farming system.

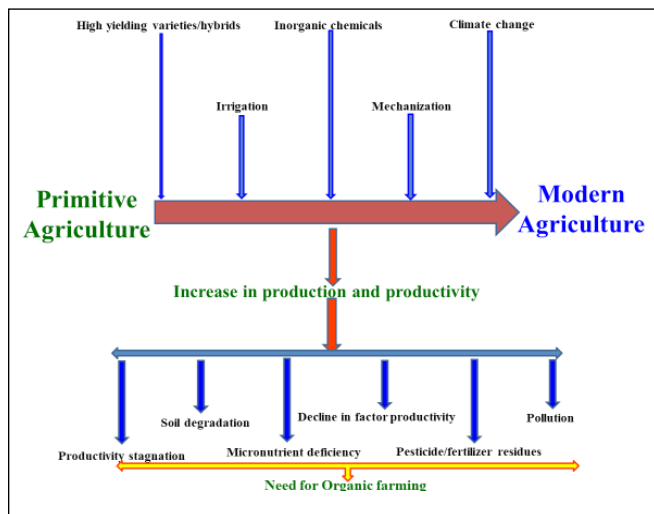


Figure 1: Flow chart showing ill effects of modern Agriculture and need for organic farming

Organic Farming

Organic farming is a production system which favours complete use of organic materials (crop residue, animal residue, legumes, on and off farm wastages, bio-pesticides) and discourages use of synthetically produced agro-inputs, for maintaining soil productivity and fertility and pest management under conditions of sustainable natural resources and healthy environment. According to the National Organic Standards Board of the US Department of Agriculture (USDA), the word ‘Organic’ has the following official definition: *“An ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on the minimal use of off-farm inputs and management practices that restore maintain and enhance ecological harmony”*. The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people”.

According to Codex Alimentarius guidelines *“Organic agriculture is a holistic production management system which promotes and enhances ecosystem health, including biological cycles and soil biological activity. It is based on minimising the use of external inputs, avoiding the use of synthetic fertilizers and pesticides*. While, as per the International Federation of Organic Agriculture Movements (IFOAM) *“Organic agriculture is a whole system approach based upon a set of processes resulting in a sustainable ecosystem, safe food, good nutrition, animal welfare and social justice. Organic production therefore is more than a system of production that includes or excludes certain inputs”*. In simple terms as per India’s National Standards for Organic Production (NSOP), *“Organic agriculture is a system of farm design and management to create an eco-system, which can achieve sustainable productivity without the use of artificial external inputs such as chemicals, fertilizers and pesticides*.

Components

As furnished in Figure. 2, organic farming includes components like soil enriching modules, weed, pest and disease management including storage modules. In addition, many inorganic chemicals except few as allowed by NPOP (National Programme on Organic Production), have to be excluded from IWM (Integrated weed management) and BIPM (Bio-intensive pest management) in Agriculture, Horticulture, Animal Husbandry, honey production, pasture management etc.

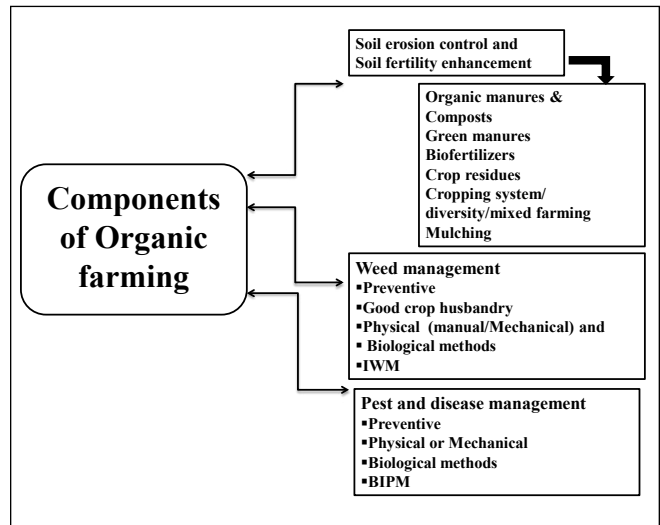


Figure 2: Components of organic farming (Source: Kumar et al., 2019)

Organic Farm Land

The data on organic farm land is available for 173 countries (FiBL statistics, 2020). Though spectacular increase in area under organic Agriculture in India was witnessed from 2775 ha to 1.9 M ha during the period 2000 to 2018, the share of India’s organic area is only 1.08% of India’s total farm land. This is less as compared to that of Australia (35.6 M ha; 24.66%), Argentina (3.6 M ha; 2.44%) and China (3.13 M ha; 0.61%). On the other hand, in view of ever increasing awareness on health and subsequent demand for organic products across the world including India, the area under organic cultivation is expected to increase further. Hence, there is a need to ensure systematic research and documentation on the benefits of organic products.

Government Support

Various state governments and non-governmental organizations are promoting organic farming on a large scale to reduce the investment cost and achieve good yield and avoiding farmers falling into debt traps and prevent them from committing suicides. It is promoted through Param Paragath Krishi Vikas Yojana (PKVY) in a cluster approach of

50 acres each and RKVY. Organic inputs worth Rs. 5,000.00/ha are being given to the registered farmers as decided by the district level committee wherein the representative farmers are also the members. Free organic certification is provided through various accredited agencies (e.g. APEDA), in addition to the capacity building of the registered farmers through trainings and organising exposure visits. Further to facilitate availability of sufficient organic inputs locally, assistance for establishment of Vermicompost units, Vermi hatcheries, High Density Polyethylene (HDPE) Woven beds for Vermiculture is also provided.

Scope and Opportunities for Organic Farming

Taking the advantage of diversified climate, soil, crops and cropping systems across the country and increasing demand for organic products, organic farming can be promoted on a large scale across states in India. However, different stake holders (Figure. 3) have to address issues as furnished hereunder.



Figure 3: Stake holders of Organic farming

Agricultural Research Institutes/ Universities

Though research on various field and horticultural crops and cropping systems and Animal husbandry across research institutes under ICAR (Indian Council of Agricultural Research) and SAUs (State Agricultural Universities) is going on, the following issues have to be addressed.

- Systematic research and development of complete organic packages for all field and horticultural crops.
- Long-term studies impact of organic farming on crop productivity, quality, soil health and farm income.
- Research needs to be conducted to find out ways and means of correcting micronutrient deficiencies or reclamation of problematic soils.
- Possibilities for drip fertigation with organic products for nutrition and methods to overcome clogging problems in micro irrigation methods.
- Identification of endemic pests and diseases and effective non-chemical methods.

- Development of host plant resistance i.e., varieties/ hybrids with resistance to endemic pests and diseases.
- Seed to seed mechanization packages have to be developed for all crops.
- Develop scientific information on role of organic agriculture in alleviating ill effects of climate change (Nagar *et al.*, 2020).
- Strengthening laboratories for analysing soil, plant and seed quality parameters.
- Validation of local and successful organic practices adopted by the organic farmers.
- Natural farming practices (suggested by Mr. Subhash Palekar) must be validated across crops and recommended if found good or fine tuned.
- Standardization of composition of nutrients/ energy factors for each product.
- Capacity building programmes for scientists/ department officials/ entrepreneurs.

Government

- Delineation of geographical areas/ clusters. For e.g. low fertilizer/ chemical consuming states/ zones/ tribal areas/ forest belts/ islands/ hill ecosystems.
- Identification of potential crops and products. For e.g. basmati rice, millets (nutri-cereals), oilseeds, pulses, honey, sugar and jiggery.
- Mapping of avenues for export of organic products.
- Pro-organic policies.
- Making certification process easier.
- Providing market support and assurance of premium price for organic growers.
- Establishing separate institutes for organic farming research on the lines Sikkim, Gujarat and Karnataka.
- Constant vigilance against pesticide residues in fruits and vegetables, whether grown locally or sourced from other states, artificial ripening of fruits.
- Ban the production and supply of ripening chemicals/ pesticides with residual effect.
- Establishment of state organic mission to prepare action plan for organic farming in the states.
- Establishment of a horticulture corporation to encourage organic farming and procure organic vegetables, fruits and spices would go a long way in streamlining supply of necessities and help take rythu bazars to the next level.
- Strengthening laboratories for analysing soil, plant and seed quality parameters.
- Compensating yield loss in the initial years.
- Gradual withdrawal of fertilizers from market in organic rich areas.

- Display information on nutrition on the product packing.
- Capacity building programmes for farmers/ Self Help Groups (SHGs).
- Increase the financial assistance to be given for organic inputs upto Rs. 15,000.00 to Rs. 20,000.00/ha.

Supply/ Stocks

- Sufficient stocks of NPV, Bt formulations, egg/ larval parasites/ parasitoids, entomopathogenic fungi/ biopesticides/ biological agents.
- Supply of rock phosphate and gypsum from mined source.
- Increase the production and supply of compost, vermicompost and biofertilizers.
- Supply of certain allowable chemicals in optimum quantity.

Creation of Demand for Organic Food

- Serve in official meetings.
- Serve in military canteens.
- Serve in students hostels/ officers messes.
- Serve as a part of mid meal schemes.
- Creation of facilities for export.

Farmers

- Follow complete organic packages for all crops as suggested.
- Participate in training and acquire skills/ knowledge for practising organic farming.
- Maintain and market organic and inorganic produce separately.

Conclusion

Organic farming gained momentum over the last few years due to improvement in health consciousness among consumers, awareness among different stake holders and export potential besides need for addressing key issues of yield plateauing, soil health and quality. Hence, there is a dire need to design and develop profitable organic packages for different crops in Agriculture, Horticulture, Animal Husbandry, Pasture management and range lands besides forest products. Seed to seed packages including post harvest care must be non-chemical. To take the organic farming movement forward, organic seed production must also be given due importance and certification must be made easier. Government and non-governmental organizations have to upscale the technology among producers through capacity building programmes and technology back stopping.

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