Organic Farming - The Future of Agriculture

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Introduction

Agricultural soil has been adversely affected for increased food production. Extensive use of chemical fertilizers, pesticides and heavy machinery resulted in exploitation of commercial inputs, food and soil quality. Its impact on human health has also been emerged in the form of different nutritional deficiency disorders. Thus, creating a unique environment for biologically active soil has sprinkled since green revolution, because most of the soil does not respond towards productivity. Moreover, human health is becoming a challenging issue day to day.

To obtain quality food production and buildup of health is urgent need as health of citizens is of prime importance in the overall development of the nation which is achievable only with nutritive food. It has shifted Indian Agriculture from a step of food deficiency to food sufficiency, but due to high and injudicious use of chemicals, fertilizers, pesticides we happen to suffer from serious pest problems i.e., water holding capacity (WHC) of soil, soil fertility column. Besides all these problems have resulted in nutritional deficiency in the food although production is in bulk.

The nutrient need of organic agriculture mainly depends on on-farm inputs which are safe and locally available. In this regard, crop residue plays a critical role in nutrient transformation, soil health and for sustaining the productivity of soils and to minimize the cost of cultivation which is beyond the farmer's reach, low cost organic inputs respondent to soil health and crop productivity. Environment in the largest sense is the complex network of Physical, Chemical, Biological and Ecological components that make up the natural world. Human activities commonly affect the distribution, quantity and quality of every environmental aspect be it: Soil, Air, Water . At this point in time, a keen awareness has sprung on the adoption of "Organic Farming" as a medication to cure the ills of modern chemical agriculture.

"Organic agriculture is a production system sustaining the health of soil, ecosystems and people. It depends on ecological processes, biodiversity and cycles adapted to local conditions, instead of using inputs with adverse effects. Organic agriculture unites tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality life for all involved". Organic farming system focuses for enhancing the soil properties, minimizing food chain associated health hazards and attaining closed nutrient cycles, the key factors for sustainable agriculture.

Over conventional organic agriculture

Organic agriculture relies solely on natural processes for input and recycles nutrients on-site to eliminate the use of non-renewable resources it is relatively small-scale, with independent operations and strictly limiting the use of purchased fertilizers, pesticides, plant growth regulators such as hormones, livestock

antibiotics, food additives, and genetically modified crops and other inputs. Organic agriculture is a system that uses ecologically based pest controls and bio fertilizers derived largely from animal and plant wastes and nitrogen fixing cover crops also reduces soil erosion, decreases nitrate leaching into ground water and surface water. Modern Organic agriculture was developed as a response to the environment harm caused due to the conventional farming, and has numerous ecological benefits, research shows that organic products have more minerals, less water and less artificial chemicals usually containing higher level of Vitamin C, protein and other minerals. Alternatively, conventional agriculture requires an incredible amount of energy to produce, prepare, and transport food and at a large scale, often owned or economically tied to major food corporations intensive chemical programs and the excessive usage of agro-chemicals over years like pesticides and fertilizers has distressed the soil health and lead to declining of crop yields and quality of products. Hence, a natural balance needs to be maintained at all cost. The obvious choice would be judicious use of agro-chemicals and more and more use of naturally occurring material in farming systems. However, a 2019 report specifies that organic food is far less likely to contain pesticide residues than conventional food (13% of organic produce samples vs. 71% of conventional food produce samples contained a pesticide residue, when long banned persistent pesticides were excluded).It is significantly more profitable than conventional agriculture and can expand globally.

Goals and objectives of organic farming

The global umbrella organization for organic agriculture, The International Federation of Organic Agriculture Movement (IFOAM) was founded by five organizations from the three continents, Europe, the USA and Africa in 1972 in Versailles, near Paris. The key characteristics and practices of organic farming to be followed:

- To ensure best possible utilization of natural resources for short-term benefit and help in preserving them for future generation.
- To increase and lead to better, more and nutritive yield.
- To reduce human and animal health hazards by reducing the level of residues in the product.
- To nurture and improve biological cycles within the farming systems by improving granulation, good tilth, good aeration, water holding capacity, soil microbial load.
- To maintain environment health and elude all forms of pollution.
- To maintain genetic diversity.
- To improve the soil's chemical properties such as supply and retention of soil nutrients and promote favorable chemical reactions.
- To deliver qualitative food keeping agricultural production at higher level and making it sustainable.

Methods and Techniques

Plants need a well-balanced diet, for the better growth and yield. So, providing a cost effective, simple, easy to produce, suitable production technology, organic farming method strikes balance between what is taken out of the soil with what is returned to it, without relying on outside inputs. It does not lead to the release of synthetic pesticides into the food supply or the environment, but it does allow a few so called natural pesticides, such as those derived from plants for which enhancing soil health is the cornerstone of organic farming. The soil has to hold the organic matter and create conditions for microorganisms to work

on it to release nutrients, it is basically the conversion of soil from 'non-living' to 'living'. To sustain life in soil, several techniques are involved like conversion of soil and moisture, maintenance of soil organic matter. Farmers should practice:

Green manuring which increases water holding capacity, decrease soil erosion, weed proliferation and helps in reclamation of alkaline soils.

Compost making, a rich source of organic matter, it improves the physico-chemical and biological properties of the soil making it more impervious to stresses such as drought, diseases and toxicity, possesses an active nutrient cycling activity because of vigorous microbial activity consequently promoting higher yield and higher quality of crops.

Vermicompost is rich in beneficial micro flora such as a fixers, P-solubilizers and in all essential plant nutrients encouraging plant growth, improves soil structure, texture, aeration. It contains valuable vitamins, enzymes and hormones like auxins, gibberellins etc., and have tremendous prospects in converting agro-wastes and city garbage into valuable agricultural input. It also reduces the incidence of pest and diseases.

Use of bio-fertilizers is efficient as they speed up certain microbial processes in the soil which augment the extent of availability of nutrients in a form easily assimilated by plants, increases the enzymatic activity since contamination is nil. They are cost effective and renewable source of plant nutrients to augment the chemical fertilizers for sustainable agriculture.

Once that is achieved the soil it will be able to take care of itself with less maintenance cost and minimum external inputs also promoting natural techniques such as crop rotation, animal manure, off-farm waste, crop residues, plant protection and nutrient mobilization.

Profitability of organic farming globally

Organic farming, in general, is much more profitable than conventional farming. In developing countries, the profit margin is much more for organic farms because they have better yields and higher prices than conventional but are much greater under less favourable conditions. Since 1990, the market for organic food and other products has grown speedily, reaching $63 billion globally in 2012. As of 2019, approximately 72,300,000 hectares worldwide were farmed organically, demonstrating approximately 1.5 percent of total world farmland. In India the organic food market is approximately of INR 5.6 billion and is in an emerging opportunity for generation of employment and income at village level. In 2016 the overall area under organic farming in India stood at 1,490,000.00 ha. Presently India ranks 33rd in terms of entire land in organic cultivation and 88th in terms of the ratio of agricultural land under organic crops to total farming area. Today the land under organic cultivation is 4.43 million hectares and is growing at steady rate. India is home to 30 percent of the total organic producers in the world, but accounts for just 2.59 percent (1.5 million hectares) of the total organic cultivation area of 57.8 million hectares, according to the World of Organic Agriculture 2018 report.

The markets for organic products in North America and Europe are very strong, in 2001, estimated to have $6 and $8 billion respectively of the $20 billion global market. Europe farms 23 percent of global organic farmland (6,900,000 ha 17,000,000 acres), followed by Asia has 9.5 percent while North America has 7.2 percent. Africa has 3 percent. Besides Australia, the countries having the most organic farmland are Argentina (3.1 million hectares - 7.7 million acres), the United States (1.6 million hectares - 4 million acres) and China (2.3 million hectares - 5.7 million acres). Argentina's most of organic farmland is

pasture, such as Australia. Spain, Germany, Brazil (the world's largest agricultural exporter), Uruguay, and England follow the United States in the amount of organic land. Globally, organic farming is between 22 and 35 percent more profitable for farmers than conventional methods, according to a 2015 meta-analysis. Farming suffers environmental, health and social costs. Organic agriculture faces an unfair competition in the market place due to the upshot of current subsidy schemes favouring conventional production. So, increase in investment in green agriculture is projected to lead to growth in employment of about 60 per cent compared with current levels and that green agriculture investments could create 47 million additional jobs as many farmers are finding opportunities in organic food production. It will provide ample opportunity for employment and bring prosperity and peace in the nation. So, there is urgent need for favourable policy initiatives to strengthen this sector.

Suggestions to promote organic farming

Organic farming is a freshly emerging concept with massive success and used to increase profits. The most valuable market opportunities we can create are those that benefit people like producer, entrepreneurs, employees or consumers who are living in poverty, creating financial mechanism and market structures with low cost and hassle-free certification. Well-developed domestic market circuits – contracts, contacts, information, pricing should be set up. The Indian government will offer capital Investment subsidy for organic farmers. It is offered through the National Centre of Organic Farming (NCOF) under the Department of Agriculture and Cooperation with the National Bank of Agriculture and Rural Development (NABARD). The prime objective is to readily attainable organic resources for improving from productivity without letting soil health. Organic farming mainly includes the cultivation of plants and rearing of animals in natural means, prioritizing nutritional benefits to enable healthy diets.

Conclusion

Organic Agriculture differs from conventional agriculture not only gradually but fundamentally. Instigating organic methods consequently seems to deliver a new quality in how the agro-ecosystem works. Organic agriculture is one of several way to sustainable agriculture and many techniques used e.g. Inter-cropping, rotation of crops, mulching, digging, integration of crops and livestock practiced under several agricultural systems. Organic farming seems like to improve soil fertility in a way and to a point which cannot be achieved by conventional farming even if the later consistently respects some ecologically principles.

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