IAS GATEWAYY

AN INITIATIVE BY
VETRII IAS

# VETRII IAS GATEWAY

www.iasgatewayy.com

# KURUKSHETRA

## MAY - 2019

044-26265326 / 98400 97666 / 96001 24042

# ORGANIC FARMING FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

1. Organic Farming
2. Why Organic Farming
3. Principles of Organic Farming
4. Benefits
5. System of Rice Intensification
6. Components of Organic Farming for Sustainable Agriculture Development
7. Status of Organic Agriculture
8. Constrains in Organic Farming
9. Role of NABARD in Organic Farming
10. Suggestions to Improve Organic Farming
11. Innovative methods and technology
12. Conclusion

## Organic Farming:

- The system of organic farming is based on an intimate understanding of nature's laws and rules. Organic agriculture is a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.

## Why Organic Farming:

- It is totally environment friendly
- It reduces carbon emission by 40-60% compared to farming with chemical fertilizers and pesticides
- It does not pollute the environment with chemicals hence it preserves the biodiversity
- It conserves water and enhances moisture retention in fields
- It ensures sustainable soil health and reduces soil erosion
- It reduces the use of non-renewable energy
- It is a healthier option, Organic products taste better
- It increases livelihood opportunities

## Principles of Organic Farming:

- The principles of organic farming were formulated and developed in September 2005 by The International Federation of Organic Agriculture Movements
  (IFAOM – Organics International) IFAOM. These are:

1. The Principle of Health: sustain and enhance the health of soil, water, air, environment, animal, human and plant as one and indivisible.

2. The Principle of Ecology: Based on Living Ecological Systems and Cycles.
3. The Principle of Fairness: build on relationships that ensure fairness with regard to the common environment and life opportunities. The Principle of Care: should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the overall environment.

**Benefits:**

- **Improves Soil Fertility & Structure** - It replenish soil's organic matter, feed soil life, reduce erosion, improve soil structure and enhance nutrient cycling and water retention.
- **Improves Water Quality** - Use of fodder legumes and green manures can optimize soil nutrient release and plant nutrient uptake. Enhanced soil structure, water infiltration, and nutrient retention reduce the risk of groundwater pollution.
- **Protects & Promotes Biodiversity** - Organic farm practices are largely intrinsic and enhance food resource, habitat heterogeneity, prey-predation relationships and reduce toxic influences.
- **Carbon Sequestration** - As per IPCC (2007), the soil carbon sequestration is cost effective and may contribute to ~89% of total carbon mitigation.
- **Reduced Energy Dependence** - Conventional farm systems require more overall energY. inputs. Reduced energy use in organic farming would not only reduce economic load but also share to solve environmental problems such as climate change.
- **Employment Opportunities** - Organic farming system being labour intensive can help overcome rural employment.
- **Boost to Export** - Indian organic market is export oriented. Greater and more diverse organic produce would help India earn foreign exchange.
- **Climate Change Risk Management** - It is better able to withstand adverse climatic effects such as drought and flood conditions.
- **Production of Healthier Food** – Organic foods are more nutritious and higher in anti-oxidants as they are grown on more nutrient rich, nutrient balanced and healthy soils.

**System of Rice Intensification:**

- The System of Rice Intensification involves cultivating rice with as much organic manure as possible, starting with young seedlings planted singly at wider spacing in a square pattern; and with intermittent irrigation that keeps the soil moist but not inundated, and frequent inter cultivation with weeder that actively aerates the soil.

**Benefits:**

- Reduced requirement of seed and water – Requirement of seed is only one-eighth (1/8) and that of water is 20%.

- No standing water is required – This eliminates the swamp effect and consequent methane gas emissions. Increased Yield – According to a case study done by India swiss agency in Uttrakhand, yield under SRI was 96% more than the conventional practice.
- Farmers in Bihar, Tripura, Tamil Nadu, Jharkhand Chhattisgarh, West Bengal, Orissa and Kerala are extensively adopting this technology with very beneficial results

## COMPONENTS OF ORGANIC FARMING FOR SUSTAINABLE DEVELOPMENT

- **Crop Rotation:** It is a systematic arrangement for the growing of various crops in a more or less regular sequence on the same land covering a period of two years and more.
- **Crop Residue:** About fifty percent of the crop residues are utilized as animal fed, the rest could be very well utilized for recycling of nutrients.
- **Manure:** The organic manure is derived from biological sources like the plant, animal and human residues.

### Waste:

1. Industrial Waste: Among the industrial by-products, spent wash from distillery, molasses and press mud from industry have good manure, value.
2. Municipal and Sewage Waste: Sewage sludge, particularly from industrialized cities, is contaminated with heavy metals and these pose hazards to plants, animals and human beings.

- **Biofertilizers:** Biofertilizers is microorganism's culture capable of fixing atmospheric nitrogen when suitable crops are inoculated with them. The main inputs are microorganisms, which are capable of mobilizing nutritive elements from non-usable form through a biological process.
- **Bio-Pesticide:** Bio-pesticides are natural plant products that belong to the secondary metabolites, which include thousands of alkanoids, terpenoids, phenolics, and minor of alkaloids, terpenoids, phenolics, and minor secondary chemicals. Their biological activity against insects, nematodes, fungi and other organisms is well documented.
- **Vermicompost:** Vermicompost has a component in biological farming, which is found to be effective in enhancing soil fertility and producing large numbers of agricultural crops. The average nutrient content of vermicompost is much higher than that of FYM.

### Status of Organic Agriculture:

- The global ranking of India in organic agriculture stood at eighth position with 1.78 million hectares of area under it in 2017.
- The share of organic agricultural land of India was 2.55 percent in the total world of organic agriculture.

- India has the highest number of organic producers in the world accounting to 30.58 percent.
- Its total production was 16,75,560.70 metric tonnes in the year 2017-18.
- In 2016, Sikkim became the first organic state of India.
- India's per capita consumption of organic food was 0.2 Euros as against the world's per capita consumption (12.2 Euros).
- In India, among all the states Madhya Pradesh has effectively implemented organic practices and schemes.
- Therefore, Madhya Pradesh has the highest area and production within the country since the last decade.

## Constrains in Organic Farming:

### A. Environmental constrains:

1. **Water Quality:** Wastewater irrigation has become a very common practice in many countries including India. Irrigation of crops with wastewater may cause heavy metal accumulation and degrade soil quality. For the success of organic farming, efforts should be made to ensure the availability of contamination-free fresh waters.
2. **Atmospheric deposition:** High atmospheric deposition and accumulation of heavy metals in crops and vegetables have also been reported in India. The atmospheric deposition of heavy metals may constrain compromising organic farming with respect to its ability to stabilize soil fertility and provide toxin-free produce.

### B. Resources Need:

- With the advent of technology, the livestock population in our country has declined sharply.
- A large part of the rural population in our country is poor and depends on animal manure for domestic fuel. This further constrains the availability of animal manure for agricultural use.
- To remove this 'competitive' constraint, useful options and appropriate farm-scale management strategies are required.
- Lack of sufficient stock of vermicompost and biofertilizers in the local market further constrain the organic producers.
- Further, constraints associated with the availability of appropriate amount of biopesticides may also lead organic producers in India to risk.
- Additionally, most of the crop residues in our country are removed from the fields for the purpose of fodder and fuel. This has led the use of mulch farming technique towards failure.

### C. Certification

- Problems associated with certification, for instance, a time lag of three-years (conversion stage), often constrain small landholders from adopting organic farming. The certification is essential to authenticate organic produce and to validate the price margin in the market.

- Lack of knowledge and access to certification discourage the small farm holders in India. To overcome these issues, training and institutional demonstration with fiscal incentives is being provided to encourage small farm holders.

### D. Social Acceptance:

1. The majority of small farm holders depend on government incentives and are striving for a profit margin in the indigenous market. Therefore, small farm holders in our country are apprehensive towards adopting organic farming.
2. Major issues that need to be resolved to encourage acceptance in small farm holdings include access to certification, lack of local market, cost-benefit anomalies, lack of appropriate knowledge to RMPs and non-availability of organic supplements.

## Nabard and Organic Farming:

### A. NABARD Consultancy services for Organic Farming:

- Nabcons has the know-how on cultivation practices under organic farming through alternate Eco- friendly Technologies like Biofertilizers, Bio-pesticides, Neem formulations, Bio-fuels, etc.

### B. Subsidy schemes of NABARD for Organic Farming:

- The capital investments subsidy scheme for commercial production units of organic/biological inputs is being implemented by the Department of Agriculture & Cooperation through the National Centre of Organic Farming (NCOF) in collaboration with NABARD.
- The main objectives of the scheme are to promote organic farming in the country by making available the organic inputs, to increase agricultural productivity while maintaining the soil health and environmental safety.
- The scheme provides credit linked and back-ended capital investment subsidy.
- Biofertilizer and bio-pesticides unit are provided with a capital subsidy of 25% of the total project cost subject to a maximum of Rs. 40 lakhs per unit.
- Fruit & vegetable compost units are provided with a capital subsidy of 333 per cent of the total project cost subject to a maximum of Rs. 60 lakhs per unit.

## Innovative Methods and Technology:

- Inhana Organic Farming (IRF) Technology
- IRF was developed by an Indian Scientist Dr. P. Das Biswas.
- It provides a nature receptive pathway for crop production taking into account the interrelated and integrated relationships of all the components of the ecosystem.
- It blends ancient Indian wisdom with the scientific knowledge and ensures healthy plant and soil system which ultimately leads to a successful crop output without disrupting the ecological harmony.

- This technology has already been adopted in reputed tea estates in India and has shown its effectivity towards the reduction of chemical/pesticide load and management of recurrent disease problems.

### Trap Cropping:

- Crops are grown to attract insects or other organisms like nematodes to protect target crops from pest attacks.
- This is achieved by either preventing the pests from reaching the crop or concentrating them in a certain part of the field where they can be effectively destroyed/controlled.

### Green Manuring:

- It is practice of ploughing or turning into the soil undecomposed green plant tissues grown in-situ or cut and brought in for incorporation for the purpose of improving physical structure as well as fertility of soil.
- It is usually done in lean period available between the two main crops.
- It adds organic matter to the soil which helps in maintaining the activity of the beneficial. soil micro-organisms.
- It also improves the water holding capacity of soil thus reducing the run-off and soil erosion.

### Suggestions to Improve Organic Farming:

- **Direct Marketing** - There is need for direct marketing models where producer can directly sell their produce to the consumers.
- **Use of Technology** - Like the use of waste decomposer, crop-residue, biomass of non-conventional shrubs, vermicomposting for nutrient management, use of bio-agent and predators for pest and disease management need to be promoted.
- **Promotion of High Value Crop** - During conversion period, lower yield can be compensated with high price crop such as western vegetables, medicinal and aromatic plants.
- **Crop Planning & Diversity** - Proper crop planning is a key factor of production as well as marketing.
- **Contract Farming** - As organic farming required stringent quality control, contract farming can emerge as an option to de-risk agriculture, provide input-output support and realization of better price.
- **Collectivization of Farmers** - Producer organizations are emerging as an effective way to address various challenges such as access to credit, investments, technologies, knowledge support and market linkages.
- **Promotion of Input Based Enterprises** - It can expedite not only a faster spread of organic farming, but also has the potential to generate an alternate livelihood for the rural populace.

- **Agri-Preneurs to Provide Market** – Emphasis on e-commerce based agro-startups in agro marketing through agribusiness incubators, special incentives, capacity building among farmers.
- Linking Farmers to Processors and Exporters – Each FPO may be provided handholding support by one professional on a day to day basis.
- **Widespread Extension** – State wise intensive campaign on Organic farming like "Bio-Village" has to be adopted by all the states.
- **Agro-Tourism** – 'Pluck and Play Model' to be promoted so that urban families or tourist visit farms, harvest fruits and vegetables of their choice and pay to farmers.
- **Branding Through Professionals** – Branding support to FPOs will enhance the value of produce. GI tagged commodities may also create better publicity and brand building.
- **Organic Certification** – Certification builds trust among users. There is need for generating awareness regarding the procedures through capacity building programs.
- **Retailing, Packaging and Labeling** – FPOs have to procide training to produce dressed fruits and vegetables in order to fetch attractive prices.
- **Participation in Fairs and Exhibitions** – It is an effective way to reach customers and create a brand identity.

## Conclusion:

- We have the technology and the farmers to adopt it. What is required is a paradigm shift in our approach and understanding of what organic farming can do to change the agricultural scenario of India – not only the farmers in the hill areas and the north-east but also the small and marginal farmers of the rest of the country.
- The need of the hour is a Mission Mode on organic farming to be achieved within a limited time frame.