



## Organic Farming: A Sustainable and Ecofriendly Production Method

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### Abstract-

Organic farming is a method of producing food by maintaining soil fertility and increasing soil carbon pool. Organic farmers think about the effects of their farming practices on the soil, crops and livestock on the farm, the quality of food they produce, the local community and the wider environment. India has a great potential for organic farming using traditional wisdoms prevailing in the villages of India. Promotion of organic farming in India could prove beneficial to increase the share of Indian agricultural export in the world export. Farmers need to go through organic conversion and certification of their farms for getting certified as organic producers producing organic agricultural products. For this crop-specific and farming situation – specific package of practices for organic cultivation should be developed. No clear-cut evidence is available to support consumer perceptions regarding potential health benefits of organic foods. An in-depth research on quality aspects is also required.

**Keywords-** Organic, Farming, Conversion, Certification.

### Introduction-

Organic agriculture is a sustainable and environment friendly production method, which has particular advantages for small-scale farmers. (Mader *et al*, 2002). It contributes to poverty alleviation and food security by a combination of many features, such as increasing yields in low-input areas, conserving bio-diversity and nature resources on the farm, increasing income and reduction costs, producing food in sustainable manner in the long term. A combination of agriculture with dairy and poultry farming fetches the small farmers more average net income than other enterprises. (Krishna Rao, 1992).

Green Revolution with high synthetic fertilizer input use caused many hazards like soil erosion, decreased groundwater level, pollution due to fertilizers and pesticides, genetic erosion, reduced food quality and increased the cost of cultivation, rendering the farmer poorer year by year. (Ram, 2007). With the increase in population we need to stabilize agricultural production in a sustainable manner. Thus, a natural balance needs to be maintained at all cost for existence of life and property. Organically cultivated soils are relatively better attuned to withstand water stress and nutrient loss. Their potential to counter soil degradation is high and several experiments in arid areas have revealed that organic farming may help combat desertification.

FAO suggested that “Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion

of all synthetic off-farm inputs”. Organic farming is being promoted in India under National Project on Organic Farming (NPOF) since October 2004, National Centre of Organic Farming (NCOF) at Ghaziabad, National Horticulture Mission (NHM); and Rashtriya Krishi Vikas Yojana (RKVY). India produced around 3.88 m MT of certified organic products which includes edible products along with organic cotton fiber. Total area under organic farming in India in year 2010-11 was 7.8 mha (including certified cultivated area and in conversion cultivated area.) Approximately, 5.55 mha area is under organic certification in year 2011-12. The states of Uttarakhand and Sikkim have already declared their states as ‘organic states’.

### Principles of Organic Farming:

#### 1. A closed system

Organic farmers aim, as far as possible, for a closed system. External inputs and waste outputs are at a minimum, so recycling is important and nature from livestock is a resource.

#### 2. Soil fertility and structure

Soil is one of the most important resources. Organic farmers aim to maintain the long-term fertility of the soil. Biologically active soil will decompose organic matter faster, so bacteria, fungi and earthworms are encouraged. When soil organisms decompose organic matter, nutrients essential for plant growth are recycled back into the soil to ‘feed’ the next crop.

Farmers must also protect soil structure. For air, water and nutrients to reach and be absorbed by plant roots, they need pores in the soil. So it is very important for the soil not to be compacted by livestock on the soil in wet winter weather or large farm machinery on wet ground.

### 3. Pollution and the use of fossil fuels

Avoidance of polluting both farm and the wider environment is a priority. As well as waste management and good farming practices, usage of fossil fuel in food production is kept to an absolute minimum. Burning fossil fuel to release energy releases gasses that add to global climate change and the extraction of fossil fuels can cause widespread environmental destruction. Between 4 and 6 tonnes of crude oil is needed to make one tone of man-made fertilizer. Organic farmers do not use it.

Manure produced by farm livestock can be very polluting, so organic farmers use it as a natural fertilizer or grassland fields but only in spring or summer as it will decompose quickly then and help plants to grow. It is never spread in winter when the soil organisms are too cold to decompose it and the crops are too cold to grow; then it could be washed off into rivers by winter rains and causes some water plants to grow quicker than others, in turn killing other aquatic plants which decompose and release carbon dioxide into the water depleting oxygen and killing other aquatic plants and animals. Organic farmers also try to sell produce locally to reduce 'food miles' or the distance that food travels and thereby reducing pollution.

### 4. Food quality

Organic food, if produced and sold locally, is very fresh when consumed so the quality is high. 'Fresh' produce in supermarkets has often been imported or travelled large distances and so lacks seasonal quality and freshness. Organic meat will not have been routinely fed antibiotic residues and veterinary medicines; and organic crops seek to largely exclude synthetic pesticides.

### 5. Appropriate technology

GM technology is not allowed in organic farming. Techniques include traditional rotations, as well the latest machinery and scientific organic breeding techniques where two organisms can naturally breed and produce offspring. Both wheat and rye are a type of cereal and could breed naturally given the right conditions in the wild, their genes would mix and the dominant characteristics produce the characteristics of the new plant.

### 6. Animal welfare

Organic Standards are very strict. Organic livestock must have access to food

and water, with outdoor grazing wherever possible. They must have plenty of space in fields and indoors in winter. If is a herd animal, then they should be kept together and not isolated. These high welfare standards usually prevent organic livestock from becoming ill and stressed. Organic farmers are prohibited from routine use of veterinary medicines, but if an animal becomes sick then medicines can be used after seeing permission. Animal health and welfare is the priority. Transportation times must also be kept to a minimum and slaughter takes place at registered organic abattoirs.

### Organic Conversion

When a farmer switches over to the system of organic farming from the conventional system of farming, it is known as conversion and the time between the start of organic management and certification is called conversion period. A farm may be converted step by step. The standards requirements shall be met during the conversion period. The application for certification programme should be applied from the very starting of the conversion period. The start of the conversion period may be calculated from the date of application of the certification programme. If the whole farm is not converted, the certification programme shall ensure.

### Requirements for organic conversion

Farmer should meet all the necessary requirements to fulfill conversion leading to certification procedure which includes practices like mixed farming including animal husbandry, poultry, fisheries, etc., crop rotation should be practiced in annual crops, cover crops, green manure as well as fodder crops, to minimize weeds; intercropping (mono cropping should be avoided), when perennial crops are grown, cover crops should be grown to protect the soil. Planting materials should be of organic origin or chemically untreated, resistant varieties should be grown and use of genetically engineered seeds, pollen, transgenic plant material is prohibited. Synthetic fertilizers, synthetic herbicides, fungicides, insecticides and other pesticides should be avoided and residues of the plants after harvesting should be incorporated in the soil. List of the permitted and not permitted products has been provided in Table 1.

**Table 1.1. List of the permitted and not permitted products**

<b>On farm products</b>	<b>Permitted/Restricted</b>
FYM, Poultry manure, Slurry and Urine	Permitted
Crop residues and green manure	Permitted
Straw and other mulches	Permitted
Bio-fertilizers and Biodynamic preparations	Permitted
Peat and Vermiculite	Permitted
<b>Products produced outside organic farms</b> including FYM, straw, fish products, meat, synthetic chemicals and fertilizers	Restricted
Plant based extracts (eg. Neem, garlic, pongamia etc.)	Permitted
Compost from plant residues	Permitted
Mineral like : Ca carbonate and Ca chloride, clay Mg Suphate and gypsum	Permitted
Bio-control agents like bio-pesticides	Permitted
Homeopathic and Ayurvedic preparations	Permitted
Mulches, nets and Pheromone Traps	Permitted

Use of bio-fertilizers should be done; they fix atmospheric nitrogen with the help of some soil micro-organisms. The seeds of legumes can be treated by the Rhizobium culture for proper nodulation. An integrated pest management system should be incorporated which use cultural and biological practices to overcome the damage or attack of several pest and pathogens (Table 1.2) (Rabindra, 2005). Other practices like soil and water conservation using mulching; micro-irrigation system can be incorporated for judicious irrigation. The processing of the products should be done by using solar drying, freeze drying, hot air chambers etc. Plant

products produced can be certified organic when the national standards requirements have been met during a conversion period of at least two years for annual crops and three years for perennial before the first harvest of products. The certification programme may allow plant products to be sold as “produce of organic agriculture in process of conversion”. Mainly high value crops like wheat, paddy, maize, pigeonpea, chickpea, greengram, balckgram, groundnut, mustard, cotton, sugarcane, ginger, turmeric, cumin, tea, coffee, cardamom, banana, papaya, tomato, brinjal, cole crops, leafy vegetables etc., are grown as organic in India.

**Table 1.2. List of biopesticides, major target pests and their trade names**

<b>Generic names and formulations</b>	<b>Type</b>	<b>Target/Functions</b>	<b>Trade name</b>
<i>Bacillus thuringiensis</i>	Bacterium	Lepidoptera, insects; Insecticides	Dipel-8L, Kurstaki, Halt, Biobit, Biolep and Delfin
<i>Trichoderma viridae</i>	Fungus	Soil borne disease; Fungicide	Ecode ma
<i>Trichoderma harzianum</i> 0.5WS	Fungus	Soil borne disease; Fungicide	NIPROT
NPV of <i>Helicoverpa armigera</i> of 0.43 AS	Virus	Helicoverpa armigera; Nucleopolyhydrosis virus	HELICIDE
NPV of <i>Spodoptera litura</i> 1 AS	Virus	Spodoptera litura ; Nucleopolyhydrosis virus	SPODOCIDE
<i>Pseudomonas fluorescens</i> 1.75	Bacterium	Soil borne disease ; Fungicide	Biocure B

**Organic Certification**

Organic farming and certification are attractive alternatives for both farmers and policymakers. In India, Agricultural Processed Foods Export Development Authority (APEDA) under Ministry of Commerce is the controlling body for organic certification for export. There are 11 certified agencies authorized under National

Program on Organic Production (NPOP). The standards and procedures have been formulated in harmony with international standards such as those of Codex and IFOAM. The National Accreditation Body (NAB) is responsible for giving approval on the authorization of an applicant Inspection and Certification Agency. On approval given by NAB, the APEDA issues a Certificate of

Authorization, containing the details like certificate of Authorization Number, the name and address of the inspection and certification Agency, nature of the activities covered and the date of issue and date of expiry. Farms that have been free from use of synthetic or chemicals for three years; maintaining strict physical separation of organic products from non-certified products and undergoing periodic on-site inspections are certified as organic. Certification is essentially aimed at regulating and facilitating the sale of organic products to consumers. It is intended to assure quality and prevent fraud. For organic producers, certification identifies suppliers of products approved for use in certified operations. For consumers, "certified organic" serves as a product assurance. The labeling should tell the accurate information about the organic status of the product (i.e. conversion in progress or organic). The details like name of the product, quantity of the product, name and address of the producer, name of certification agency, certification, lot number etc. are to be given in the label.

#### **CONCLUSION**

Organic farming is a method of raising the crop by using natural or organic products wasters to the maximum extent and avoiding the use of synthetic fertilizers and pesticides. Therefore, it is a socially just, environment friendly and economically viable alternative to chemical oriented farming it contributes to

poverty alleviation and food security. Organic certification is an essential procedure which aims at regulating and facilitating the sale of organic products to consumers and identifying the suppliers of products approved for use in certified operations.

#### **References-**

- Alam A., Wani A.S.(2007): Proceedings of National seminar on organic products and their future prospects, SK Univ. Agric. Sci. and Tech, Srinagar. 95-103
- B. Ram, (2007): Human Impact on Desert Environments,, Scientific Publishers, Jodhpur. 44-59
- Cacek T., Linda L.L.( 2009): .Am. J. Alternative Agric, June 1-9,
- Krishna Rao G.V. (1992): Impact of dryland farming technology production, income and employment in Ranga Reddy district of Andhra Pradesh, Ph.D. thesis, A.N.G.R. Agric. Univ. Hyderabad.
- Mader, P., Fliefback A., Dubois D., Gunst L., Fried P., Niggili U.( 2002): Science, 296, 1694-1997,
- Rabindra R.J., (2005): Microbial biopesticide formulation and applications, 1-12, Project Directorate of Biological Control, Bengaluru, Karnataka.
- Reddy, B.S.(2010): Agric Econ. Res. Review, 23, 43-358,  
www.dacnet.nic.in/ncof.  
www.naasindia.org.

