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Organic Farming in Vegetable Crops

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SUMMARY

Most of the fruits and vegetables are often eaten in fresh conditions. The indiscriminate use of chemical inputs in vegetable production concerns the contamination of foods with agrochemicals and also the pollution of environment, soil and water. It is also causing decline in productivity due to loss of organic matter and deteriorating soil quality. Therefore, in the present era of global warming and climate change, the face of agriculture has to be more environment friendly, which made us to think about alternate form of agriculture and development of production technologies which are sustainable in long run and produce food devoid of contaminants. Organic agriculture is one among the broad spectrum of production methods that are supportive of the environment and restricts the use of synthetic inputs.

INTRODUCTION

Organic farming may be defined as "a production system, which avoids or largely excludes the use of synthetically produced inputs like fertilizers, pesticides, growth regulators, etc. placing maximum reliance upon crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, ground mineral bearing rocks to maintain soil productivity and bio-pesticides for control of weeds, pests and diseases". This is also called 'ecological farming' in some northern European countries. Organic farming management is an integrated approach, where all aspects of farming systems are interlinked with each other and work for each other. A healthy biologically active soil is the source of crop nutrition, on-farm biodiversity controls pests, crop rotation and multiple cropping and growing of crops suiting to the region, soil and climate maintains the system's health, and on-farm resource management with integration of cattle ensure productivity and sustainability.

Need for Organic Farming in Vegetables

1. The enhancing production cost of the chemical farming such as investments in the manufacturing pesticides, fertilizers, irrigation etc.
2. Due to heavier environmental pollution.
3. In India, most of the vegetable farmers are poor, small or marginal.
4. Land productivity gets decline because of increased chemical fertilizers.
5. As most of the vegetable are eaten raw there is a need to reduce the contamination that causes health hazards.
6. Organic vegetable fetches more income through saving the cost of production or through international exports.

• Helps in the restoration of soil characters.

Principles:

Organic farming follows three principles. They are:
1) Minimum soil disturbance,
2) Diverse crop rotations and cover crops
3) Continuous plant residues cover.

Objectives of Organic Farming

i. To maintain genetic diversity of the production system.
ii. To maintain and increase the long term fertility of the soil.
iii. To encourage and enhance biological system within the farming system involving mircroorganisms, soil flora and fauna, plant and animals.
iv. To interact in a constructive and life enhancing way with natural systems and cycles.
v. To use renewable resources in locally organized production systems.
vi. To create a harmonious balance of crop production and animal husbandry.
vii. To minimize all forms of pollution.

Requirement of Organic Farming:

1. Organic Conversion: It is the interim period required for establishment of an organic management system and building of soil fertility. The duration of the conversion period depends upon the past use of the land and also the ecological situation. In general, 2- 3 years conversion period is required.

2. Organic Management

a. Habitat Management: It constitutes plantation on the farm to encourage creation of biodiversity on the farm and construction of structure for on farm production of manures/compost.

b. Choice of crops: All seeds and planting materials should be certified organic, Species and varieties should be adapted to the soil and climatic conditions, these should be resistant to pests and diseases, use of genetically modified seeds, pollen, transgenic plants or planting materials are not allowed.

c. Soil Fertility Management: Nutrient management is the key factor for all farming systems. In organic farming, soil fertility management depends on biologically derived nutrients through recycling of on- farm inputs. Use of organic manures such as composts, vermicompost, FYM, oil cakes and bio fertilizers (Rhizobium, Azotobacter, Azospirillum, Azolla, VAM, PSB etc.) as well as green manuring either through in-situ growing of leguminous crops (Dhaincha, sun hemp and cowpea) or through ex-situ addition of green lopping from Pongamia or Glyricidia trees. Efforts are made to minimize losses of nutrients and maximize the input use efficiency. Minimize the accumulation of toxic substances in the soil. Manures containing human excreta are prohibited for use on vegetation for human consumption. All synthetic fertilizers are prohibited.

d. Insect–Pest Management: Products of traditional nature, preferably prepared at the farm from local plants, animals and microorganisms should be used. Both physical and thermic methods are permitted. Thermic sterilization of soil is allowed to combat pests and diseases. All the synthetic herbicides, fungicides, pesticides are strictly prohibited.

e. Weed Management: Weed management through mechanical methods, growing cover crops, mulching and suppression of weeds through crop competition.

f. Soil-Water Conservation: It can be done through mulching with crop residues or plastic mulch, minimum disturbance of soil, zero tillage, adoption of drip/sprinkler irrigation methods. **3. Organic Certification:** Organic certification system is a quality assurance initiative, intended to assure quality, prevent fraud and promote commerce, based on set of standards and ethics. It is a process certification for producers of organic food and other organic products.

Techniques of Organic Farming

1. Green Manuring: It is an inexpensive source of organic fertilizer to build up or maintain soil organic matter and fertility. Hrubs, crop plants, grain legumes, grasses, weeds, ferns and algae ate incorporated into soil. The cumulative effects of continued use of green manures are important not only in terms of nitrogen supply, but also with regards to soil organic matter, phosphate and micro-nutrient which are mobilized, concentrated in the top soil and made available for plant growth.

2. Organic manure: FYM, sheep manure, crop residues, poultry manure, oil cakes, composts-coir pith compost and other farm wastage are used for organic manuring. The indigenous and biodynamic preparation such as compost preparation can be used in organic nutrition management.

3. Enriched Compost: One of the traditional sources for the crop nutrient is through composting the organic residues. Though nutrient concentration is less, apart from NPK it also provides the required micro-nutrients to the areas cultivated. Micro-nutrient supply satisfies particularly the hidden hunger in the plants and safeguards it against the injury and toxicity. It also improves chemical, physical and biological properties of the soil. In addition, compost are enriched externally through microbial inoculants, bio fertilizers etc.

4. Vermicompost: It is the compost prepared using earthworms. Biologically degradable and decomposable organic wastage are used as earthworm feed.

5. Biofertilizer: Microorganisms to fix atmospheric nitrogen, to release and mobilize phosphorous and other nutrients. Natural fertilizers containing carrier-based microorganisms viz., Rhizobium, Azotobacter, Azospirillum, Blue Green Algae, Mycorrhizae, Phosphobacteria and Plant products (botanicals) are used. Seed hardening done

with garlic extract, leaf extracts of Prosopis, Pungam, Acacia, Calotropis etc. The decayed plant extracts can be used as liquid manure for promoting plant growth.

6. Panchmukhi: Five factors of agricultural treatments adopted by the natural farmers as seed treatment, soil treatment, water treatment, environmental treatment and crop treatment are cumulatively known as panchmukhi farming process for boosting agricultural yields.

7. Panchagavya: It is a foliar spray prepared by organic growers using the following ingredients and method: Biogas slurry/cow dung 5 kg, cow urine 3 litres, cow milk 2 litres, curd 2 litres, clarified butter/ghee 1 litres, sugarcane juice 3 litres, palm sugar 1 kg, tender coconut water 3 litres, banana are mixed in a mud pot after stirring them well. Then, it is kept in a shady place for one week for fermentation. After that 3 litres of Panchagavya are diluted in 100 litres of water. The diluted mixture has to be thoroughly stirred for 20 minutes before spraying. It can be stored for one month. It reduces vegetative growth and enhances quick flowering and also gives resistance against pests and diseases.

8. Agro Industrial Waste: In recent past the agro waste quantity generated at various agro industries are increasing. A large quantitative of the organic decomposable waste are produced from it. Though the industries regard them as a value less waste, they form a rich source in plant nutrients. Hence they can be efficiently used by converting them into the valuable manure that can be applied to the crop as nutrients.

9. Mulching: It is an important technique for improving soil microclimate, enhancing soil life, structure and fertility, conserving soil moisture and energy, reducing weed growth, preventing damage by impact from solar radiation and rainfall (erosion control) and reducing the need for tillage. Widely used traditional mulches include layers of dry grass, crop residues (straw, leaves etc.), fresh organic material from trees, bushes, grasses and household refuse green manures.

CONCLUSION

Organic farming especially of vegetables is gaining momentum across the world and emerging fast as an attractive source of rural income generation. Organic products are increasingly preferred in developed countries and in major urban centers in India. There is high demand for organic food in domestic and international market which is growing around 20-25 percent annually as a result the area under organic farming has been increasing consistently. Organic vegetable production for its quality generates higher income to the farmers. Varied climatic conditions in India and wide soil types had created a huge scope for organic vegetable production to a greater extend.

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