UNIT II. Organic Farming

Present Status

- Total area under organic certification in India is - 1.49 million ha
- Total Organic production in India - 1.35 Million tones
- The state with largest area under organic certification is - Madhya
- Pradesh> Himachal Pradesh> Rajasthan
- India's First organic state- Sikkim (Declared on Jan 18,2016); Second organic state-Uttarakhand
- The country with largest area under organic farming– Australia (27.15 Mha)
- The country with highest number of organic producers in the world :- India (More than 30 per cent of world's organic producers are in India)
- India's rank in terms of organically cultivated area is - 15th
- National Organic Farming Research Institute (NOFRI) in- Sikkim (February 2016)
- National Centre of Organic Farming, Ghaziabad, UP (2004)
- India's First Organic farming University going to be set up in- Vadodara, Gujarath
- Largest exported organic product in India- Oilseeds (50%)> Processed food products>Cereals & millets> Tea>Pulses>Spices

Organic farming is a method of crop and livestock production that involves much more than choosing not to use pesticides, fertilizers, genetically modified organisms, antibiotics and growth hormones.

Organic production is a holistic system designed to optimize the productivity and fitness of diverse communities within the agro-ecosystem, including soil organisms, plants, livestock and people. The principal goal of organic production is to develop enterprises that are sustainable and harmonious with the environment.

As per the definition of the United States Department of Agriculture (USDA) study team on organic farming "organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection".

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".

Concept of organic farming

Organic farming is very much native to this land. Whosoever tries to write a history of organic farming will have to refer India and China. The farmers of these two countries are farmers of 40 centuries and it is organic farming that sustained them. This concept of organic farming is based on following principles:

- Nature is the best role model for farming, since it does not use any inputs nor demand unreasonable quantities of water.
- The entire system is based on intimate understanding of nature's ways. The system does not believe in mining of the soil of its nutrients and do not degrade it in any way for today's needs.
- The soil in this system is a living entity
- The soil's living population of microbes and other organisms are significant contributors to its fertility on a sustained basis and must be protected and nurtured at all cost.
- The total environment of the soil, from soil structure to soil cover is more important.

Main principles of organic farming

The main principles of organic farming are as follows:

- To work as much as possible within a closed system, and draw upon local resources.
- To maintain the long-term fertility of soils.
- To avoid all forms of pollution that may result from agricultural techniques.
- To produce foodstuffs of high nutritional quality and sufficient quantity.
- To reduce the use of fossil energy in agricultural practice to a minimum.
- To give livestock conditions of life that confirm to their physiological need.
- To make it possible for agricultural producers to earn a living through their work and develop their potentialities as human being.

The main pillars of organic farming are:-

- Organic threshold standards
- Reliable mechanisms regarding certification and regulatory affairs
- Technology packages
- Efficient and feasible market network.

History of Organic Farming:-

Organic farming has been practiced in India for thousands of years. The great Indian civilization thrived on organic farming; India was one of the most prosperous countries in the world until the British invaded and ruled it.

In traditional India, the entire industry of agriculture was practiced using organic techniques, where the fertilizers and pesticides were obtained from plant and animal products. Organic farming was the backbone of the Indian economy and cows were worshiped (as is still done) as sacred animals from God. The cow not only provided milk but also provided bullocks (for farming) and dung (which was used as a fertilizer).

Shift to Chemical Farming in the 1960s

During the 1950s and 1960s, the ever-increasing population of India, along with several natural calamities, led to a severe food scarcity in the country. As a result, the government was forced to import food grains from foreign countries.To increase food security, the government had to drastically increase food production in India.

The Green Revolution (under the leadership of M. S. Swaminathan) became the government's most important program in the 1960s. Several hectares of land were brought under cultivation. Hybrid seeds were introduced.

Natural and organic fertilizers were replaced by chemical fertilizers and locally made pesticides were replaced by chemical pesticides. Large chemical factories such as the Rashtriya Chemical Fertilizers were established.

Before the Green Revolution, it was feared that millions of poor Indians would die of hunger in the mid 1970s. However, within a few years, the Green Revolution had shown its impact. The country, which greatly relied on imports for its food supply, reduced its imports every passing year. In the 1990s, India had surplus food grains and had once again become an exporter of food grains to the rest of the world.

As time went by, extensive dependence on chemical farming has shown its darker side. The land is losing its fertility and is demanding larger quantities of fertilizers to be used every season.

Pests are becoming immune to pesticides, requiring the farmers to use stronger and costlier pesticides that can do more damage to the environment. Due to the increased cost of farming, farmers are falling into the trap of money lenders, who are exploiting them to no end, even forcing some to commit suicide. Both consumers and farmers are now gradually shifting back to organic farming in India.

It is believed by many that organic farming is the much healthier and sustainable option. Although the health benefits of organic food are yet to be proven fully, consumers are willing to pay a higher premium for organic crops.

Many farmers in India are shifting to organic farming due to the domestic and international demand for organic food. Further stringent standards for non-organic food in European and US markets have led to the rejection of many Indian food consignments in the past. Organic farming, therefore, provides a better alternative to chemical farming.

Percentage of area under organic farming in the total cultivated area of different countries of the world (Source: Roychowdhury et al., 2013)

Country	**Percentage of area under organic Farming**
USA	0.23
UK	4.22

Germany	4.10
Argentina	1.70
Austria	8.40
Australia	2.20
Japan	0.10
Switzerland	7.94
South Africa	0.05
Italy	3.70
India	0.03
Pakistan	0.08
Srilanka	0.05

India produced around 5, 85,970 Mt of certified organic products including all varieties of food products. India exported 86 items in the year in 2007- 08 the total volume being 37533 Mt. The export realization was around US $ 100.4 million, registering a 30 per cent growth over the previous year. Organic products are mainly exported to EU, US, Australia, Canada, Japan, Switzerland, South Africa and the Middle East countries. Cotton leads among the products exported (16, 503Mt). The states of Uttarakhand and Sikkim have declared their states as organic states'. In Maharashtra, since 2003, about 5 lakh ha area has been under organic farming (of the 1.8 crore ha of cultivable land in the state). In Gujarat, organic production of chickoo, banana and coconut is being encouraged both from profit as well as yield point of view. In Karnataka, the area under non certified organic farming (4750 hectares) was substantially high as comparison to ha land was under certified organic farming (1513 hectares). The reasons behind this transition of shifting towards organic farming are sustained soil fertility, reduced cost of cultivation, higher quality of produce, sustained yields, easy availability of farm inputs and reduced attacks of pest and diseases. Apart from this, the government of Karnataka had released a state organic farming policy in 2004 for encouraging organic farming. Infect, most of the north-eastern states are also encouraging organic farming. In Nagaland, 3000 ha area is under organic farming. Also States like Rajasthan, Tamil Nadu, Kerala, Madhya Pradesh, Himachal Pradesh and Gujarat are promoting organic farming vigorously. Various farmers' organizations have been established in different states for the marketing of organic products. For example, the establishment of the Chetana'in three states: Andhra Pradesh (Asifabad and Karimnagar), Maharashtra (Vidarbha, Akola and Yavatmal) and Tamil Nadu (Dindigul and Tuticorn). However, there are indeed some constraints being faced by the farmers for transforming their conventional farming system into organic farming system. Lanting has identified some of the problems as follows: Non- payment of premium price for these products because they are in the transition stage, lack of storage facility, with cash paid (preferably 70% of the crop value) for the stored products. Here the urgency for the assistance from the government as a helping hand is of utmost importance for overcoming the barriers faced due to the transition from conventional farming to organic farming.

Status of organic food production in India

Total area under certified organic	**2.8 M ha**
Total production	585970 Million tonnes
Total quantity exported	19456 Million tonnes
Value of total export	Rs. 30124 lakh
Number of farmers	141904

Export performance of organic food products from India

Organic Food	**Sales (tons)**
Tea	3000
Coffee	550
Spices	700
Rice	2500
Wheat	1150
Pulses	300
Oil seeds	100
Fruits and vegetables	1800
Cashew Nut	375
Cotton	1200
Herbal Products	250
Total	11,295

Presently, organic food products exported from India include the following:

- Organic Cereals: Wheat, rice, maize or corn.
- Organic Pulses: Red gram, black gram.
- Organic Fruits**:** Banana, mango, orange, pineapple, passion fruit, cashew nut, walnut.
- Organic Oil Seeds and Oils: Soybean, sunflower, mustard, cotton seed, groundnut, castor.
- Organic Vegetables: Brinjal, garlic, potato, tomato, onion.
- Organic Herbs and Spices: Chili, peppermint, cardamom, turmeric, black pepper, white pepper, amla, tamarind, ginger, vanilla, clove, cinnamon, nutmeg, mace.
- Others: Jaggery, sugar, tea, coffee, cotton, textiles.

The Government of India is promoting organic farming through various schemes like

National Project on Organic Farming:- Under National Project on Organic Farming (NPOF) scheme, assistance upto 25% and 33% of financial outlay upto a ceiling of Rs. 40 lakhs and Rs. 60 lakhs respectively is provided as back ended subsidy through NABARD for establishment of bio- pesticides/bio¬fertilizers production units and agro waste compost production units respectively. Under NPOF, a total of 56 nos. biofertilizers production units and 17 nos. of fruit/vegetables waste compost units have been established in the country.

Government has been advocating integrating use of chemical fertilizers and organic manures including biofertilizers for increasing production of major crops.

National Horticulture Mission:- Besides, under National Horticulture Mission (NHM) and Horticulture Mission for North East & Himalayan States (HMNEH), financial assistance is provided for setting up vermi-compost production units @ 50% of the cost subject to a maximum of Rs. 30,000/- per beneficiary, for adoption of organic farming @ Rs.10,000/- per hectare for maximum area of 4 hectare per beneficiary and for organic farming certification @ Rs.5.00 lakh for a group of farmers covering an area of 50 hectares.

Rashtriya Krishi Vikas Yojna:- Assistance for promotion of organic farming on different components are also available under Rashtriya Krishi Vikas Yojana (RKVY) with the approval of State Level Sanctioning Committee.

National Food Security Mission:- Under National Food Security Mission (NFSM) on Pulses, including Accelerated Pulses Production Programme (A3P), assistance for popularizing Rhizobium culture/Phosphate Solubilising bacteria is provided to the farmers under cluster demonstrations.

Promoting the use of Biofertilizer:- Central Government has notified biofertilizers like Rhizobium, Azotobacter, Azospirillum, Acetobacter, PSB, KMB, Zinc Solubilizing bacteria under Fertilizer Control Order (FCO). Similarly, under Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP) Programme, Phosphate Solubilising Bacteria/Azotobacter culture is provided to the farmers as part of technology demonstration. Further, under National Project on Management of Soil Health and Fertility (NPMSH&F) financial assistance of Rs 500 per hectare is provided to promote use of organic manure.

ICAR Contribution in Promoting Organic Farming:- All India Network Project on Soil Biodiversity-Biofertilizers is implemented by Indian Council of Agricultural Research (ICAR) for R & D on biofertilizers. The ICAR has developed technologies to prepare various types of organic manures such as phosphocompost, vermi compost, municipal solid waste compost etc. Improved and efficient strains of biofertilizers specific to different crops and soil types are being developed under Network Project on biofertilizers.

The financial assistance is provided on the basis of project proposals received from States including Maharashtra. Indian Council of Agricultural Research (ICAR) under Network Project on Organic Farming, with lead centre at Project Directorate for Farming Systems Research Modipuram is developing package of practices of different crops and cropping system under organic farming in different agro-ecological regions of the country.

Advantages of Organic Farming

1. Organic manures produce optimal condition in the soil for high yields and good quality crops.

2. They supply the entire nutrient required by the plant (NPK, secondary and micronutrients).

3. They improve plant growth and physiological activities of plants.

4. They improve the soil physical properties such as granulation and good tilt, good giving good aeration easy rot penetration and improved water holding capacity.

5. They improve the soil chemical properties such as supply and retention of soil nutrient and promote favorable chemical reaction.

6. They reduce the need for purchased inputs.

7. Most of the organic manures are wastes of byproduct which accumulated load to pollution.

8. Organic fertilizer are considered as complete palnt food.

9. Organically grown crop are believed to provide more healthy and nationally superior food for man and animals that those grown with commercial fertilizers.

10 Organically grown plants are more resistant to disease and insect and hence only a few chemical sprays or other protective treatment are required.

11. There is an increasing consumer are willing to pay more for organic foods.

12. Organic farming helps to avoid chain reaction in the environment for chemical spray and dusts.

13. Organic farming helps to prevent environment degradation and can be used to regenerate degraded areas.

14. Since the basic aim is diversification of crops, much more secure income can be obtained that when they reply on only one crop or enterprise.

A Kitchen Gardening

Home or Kitchen Garden:- Cultivation of vegetables nearby the home or backyard of the house to produce the vegetables for the family throughout the year is usually termed as Home or Kitchen garden. The size of the kitchen garden depends on the availability of land and size of the family. The intensive cultivation is adopted for the kitchen garden to produce fresh vegetable year around.

Principles

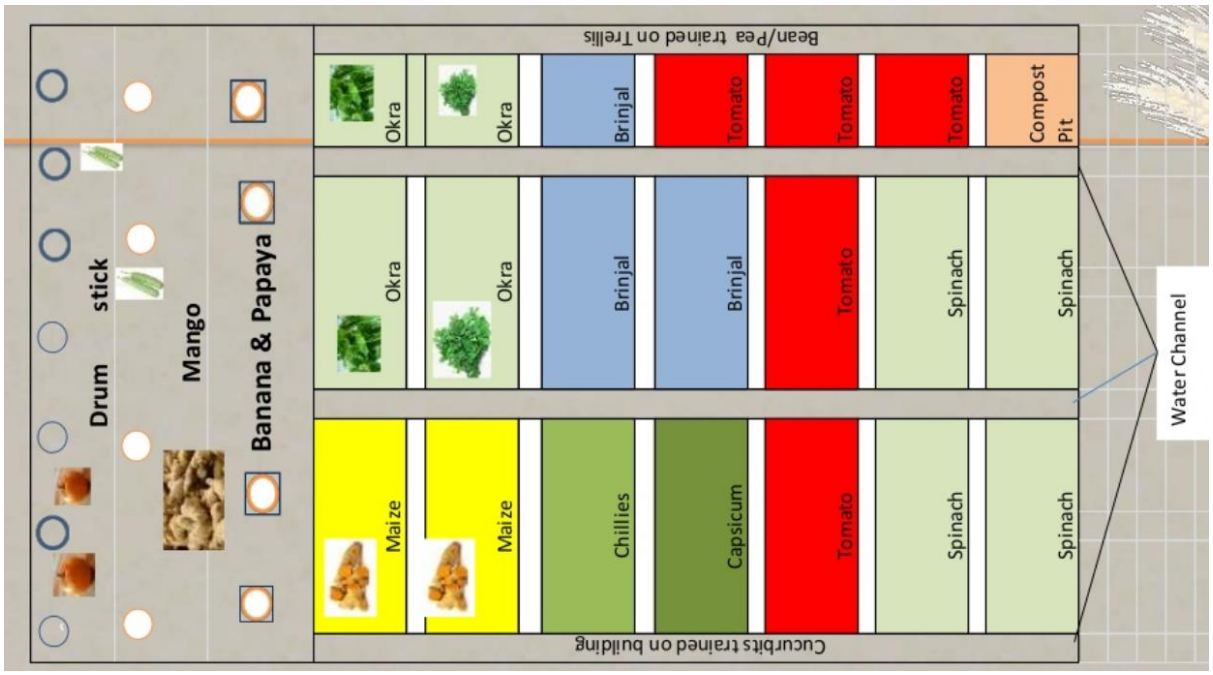
- Papaya, banana, grapes, lime, karonda are suitable fruit trees for kitchen gardening.
- The perennials and fruit plants like papaya, lemon, lime, karonda should be grown on the north side of the garden to avoid the shade effect on other crops.
- The vegetables like cucurbits and beans should be grown around the border and allowed to spread on the fence.
- The root crops like radish, turnip, carrot, etc should be raised on ridges.
- The land should not be left vacant and intensive crop cultivation should be followed with successive or companion crops.
- The proper crop rotation must be followed in the selection of vegetable crops.
- There should be a provision of compost pit in the corner of the kitchen garden.
- The stalking varieties of vegetables should be preferred for kitchen gardening.
- The proper planning including a selection of vegetable type and its varieties should be done before sowing to ensure a continuous supply of fresh vegetables full of nutrients without glut.
- For 5-6 members of family need 250-300m^2 area in kitchen garden.

- Maximum area cover in kitchen gardening from leafy vegetable.
- Under fruit tree should be planted shade loving plant like ginger, turmeric etc.
- Amrapali variety of mango and Pusa Nanha variety of papaya are suitable for kitchen gardening.

Advantages

- It provides an opportunity for recreation and exercise to family members.
- It improves Knowledge of family members about vegetable production.
- It is an ideal mean to convert leisure time into yields.
- It improves the standard of living by providing nutritious fresh vegetables and cutting down the expenditure on purchase of vegetables.
- It provides an opportunity for organic farming to get pesticides free vegetables.
- It creates a healthy green environment at the vicinity of home.
- It provides better pleasure, satisfaction, and reliability during eating of meals.
- The family can meet the sudden requirement of vegetables.

Layout of Kitchen Garden



Practice

Fill in the Blank

9. Area requirement in kitchen garden for single member of family?

a. $20m^2$ b. $50m^2$ c. $80m^2$ d. $100m^2$

10. Which is leading country in organic farming production?

a. India b. China c. USA d. Australia

11. Father of Organic Farming is?

a. Albert Howard b. Walter James c. Lord Northbourne d. Rudolf Steiner

12. Organic farming term coined by?

a. Albert Howard b. Walter James c. Lord Northbourne d. Rudolf Steiner

13. Which one is declared as a organic state?

a. Himachal Parades b. Uttarakhand c. Sikkim d. Madhya Parades

Descriptive

1. Write down the short note on present status of organic farming in India.
2. What is organic farming and why it is present need?
3. Which incidence introduce chemical farming in India.
4. Draw the layout of Kitchen Gardening?
5. Write down the summery of national food security mission.