

Participant Handbook

Sector
AGRICULTURE AND ALLIED

Sub-Sector
Agriculture Crop Production

Occupation
Farm Management

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NSQF Level 4



Organic Grower

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Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”



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It is expected that this publication would meet the complete requirements of QP/NOS based training delivery, we welcome the suggestions from users, Industry experts and other stakeholders for any improvement in future.

About this book

The Organic Grower is a person who recognizes the need for maximization of agricultural productivity and profitability with long term sustainable goals and ensuring safe and healthy food for consumers. The job of an organic grower involves cultivation of organic crops as per the organic package of practices recommended for a particular agro-climate zone, using approaches like diversity, cattle integration, on-farm input generation, biomass recycling, natural resource use optimization in exclusion of synthetic inputs directly or indirectly and sell the organic produce as per the competitive market prices without distress sale. The individual should also be able to demonstrate skills of using various tools and keep records as required. The trainee will enhance his/her knowledge under the guidance of the trainer in the following skills:

- **Knowledge and Understanding:** Adequate operational knowledge and understanding to perform the required task
- **Performance Criteria:** Gain the required skills through hands on training and perform the required operations within the specified standards
- **Professional Skills:** Ability to make operational decisions pertaining to the area of work.

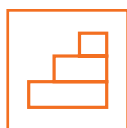
The handbook incorporates well-defined roles of Organic Grower like Planning for business, crop selection, organic farming practices and maintain the Health & Safety at the field etc. The job requires the individual to have ability to work independently, bearing risks and must have ability to work hard and take decisions pertaining to his area of work. The individual should be result oriented and should be responsible for his/her own learning and working. S/he should be able to assess and analyze various opportunities & threats pertaining to climate and market conditions

We wish all the best for your future in the Organic Farming Sector

Symbols Used



Key Learning
Outcomes



Steps



Time



Tips



Notes



Unit
Objectives



Exercise



Skill India
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1. Introduction

Unit 1.1 - Introduction to Organic farming

Unit 1.2 - Importance of Organic farming



Key Learning Outcomes

At the end of this module, you will be able to:

- Understand the Role of a Organic Grower
- Understand and study the Scopes and Opportunities of Organic Farming
- Study the Need of Organic Farming in India

UNIT 1.1: Introduction

Unit Objectives

At the end of this unit, you will be able to:

- Understand the concept of Organic farming
- Understand the scope and importance of Organic farming

1.1.1 Introduction

Concerns about the adverse impacts of pesticides and other synthetic inputs on human and environmental health necessitated use of sustainable eco-friendly techniques for food production, globally. These techniques have been assigned various names i.e. nature farming, eco-farming sustainable agriculture, biodynamic agriculture, bio-intensive gardening and organic farming. There are minor differences among these methods, however, the objectives are the same i.e. production of agricultural commodities in an eco-friendly and sustainable manner.

Amongst these methods, organic farming is widely prevalent as a term as well as a highly systematic technology. Organic farming has been defined by FAO/WHO Codex Alimentarius Commission as "a holistic production management system which promotes and enhances agro-ecosystem health including biodiversity, biological cycles and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system." European Union, USA, UK and Australia are among the world's leading countries in organic food production and utilization. Organic production is carried out under an extensive regulatory setup because organic products are sold as value-added products with certified organic labelling in developed countries. Production is strictly monitored at every step in production chain. Certification also ensures that the consumer knows from where the product is coming. It is similar to 'wool mark' used in certifying woolen clothing. Worldwide organic food industry is growing at a phenomenal rate of around 10 to 20% per year. Organic production apart from being eco-friendly offers higher net returns per unit area compared to conventional agriculture. Thus, adoption of organic agriculture makes sense from pure business point of view as well.

The concept of organic agriculture builds on the idea of efficient use of locally available resources as well as the usage of adapted technologies and locally available resources builds the concept of organic agriculture (e.g. soil fertility management, closing of nutrient cycles as far as possible, control of pests and diseases through management and natural antagonists). It is based on a system-oriented approach and can be a promising option for sustainable agricultural intensification in the tropics, as it may offer several potential benefits such as: (i) A greater yield stability, especially in risk-prone tropical ecosystems, (ii) higher yields and incomes in traditional farming systems, once they are improved and the adapted technologies are introduced, (iii) an improved soil fertility and long-term sustainability of farming systems, (iv) a reduced dependence of farmers on external inputs, (v) the restoration of degraded or abandoned land, (vi) the access to attractive markets through certified products, and (vii) new partnerships within the whole value chain, as well as a strengthened self-confidence and autonomy of farmers.

There may be differing management approaches for organic cultivation under different climates, locations and cropping systems but one thing all the systems have in common is the desire to develop a method of production capable of generating safe and healthy food and fiber, with minimum or no adverse effects on the environment and resources. Over the years it has been scientifically proven, beyond doubt, that organic farming systems are most productive, environment-friendly system of growing crops, promising environmental preservation, protection of variety and species, protecting the soil, keeping the water clean and reducing the impact of agriculture on the atmosphere. Growing demand for organically grown food and fiber coupled with credible quality assurance systems has further added to the optimism and has attracted the attention of policy planners, promoters and producers all over the world. Efforts made by International Federation for Organic Agriculture Movements (IFOAM) in promotion and various country Governments in developing and implementing quality assurance systems has ensured the growing acceptance of organic agricultural systems world over.

What is organic farming?

Organic farming system in India is not new and is being followed from ancient time. It is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (biofertilizers) to release nutrients to crops for increased sustainable production in an eco friendly pollution free 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".



Fig 1.1.1 Organic Farming

Need of organic farming

With the increase in population our compulsion would be not only to stabilize agricultural production but to increase it further in sustainable manner. The scientists have realized that the 'Green Revolution' with high input use has reached a plateau and is now sustained with diminishing return of falling dividends. Thus, a natural balance needs to be maintained at all cost for existence of life and property. The obvious choice for that would be more relevant in the present era, when these agrochemicals which are produced from fossil fuel and are not renewable and are diminishing in availability. It may also cost heavily on our foreign exchange in future.

The key characteristics of organic farming include

- Protecting the long term fertility of soils by maintaining organic matter levels, encouraging soil biological activity, and careful mechanical intervention
- Providing crop nutrients indirectly using relatively insoluble nutrient sources which are made available to the plant by the action of soil micro-organisms
- Nitrogen self-sufficiency through the use of legumes and biological nitrogen fixation, as well as effective recycling of organic materials including crop residues and livestock manures
- Weed, disease and pest control relying primarily on crop rotations, natural predators, diversity, organic manuring, resistant varieties and limited (preferably minimal) thermal, biological and chemical intervention
- The extensive management of livestock, paying full regard to their evolutionary adaptations, behavioural needs and animal welfare issues with respect to nutrition, housing, health, breeding and rearing
- Careful attention to the impact of the farming system on the wider environment and the conservation of wildlife and natural habitats

The International Federation for Organic Agriculture Movement's (IFOAM) definition of Organic agriculture is based on the principle of health, The health of soil, plant, animal, human and planet should be sustained and enhanced by Organic Agriculture The principles are to be used as a whole. They are composed as ethical principles to inspire action.

1. Principle of health

Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. This principle points out that the health of individuals and communities cannot be separated from the health of ecosystems - healthy soils produce healthy crops that foster the health of animals and people.

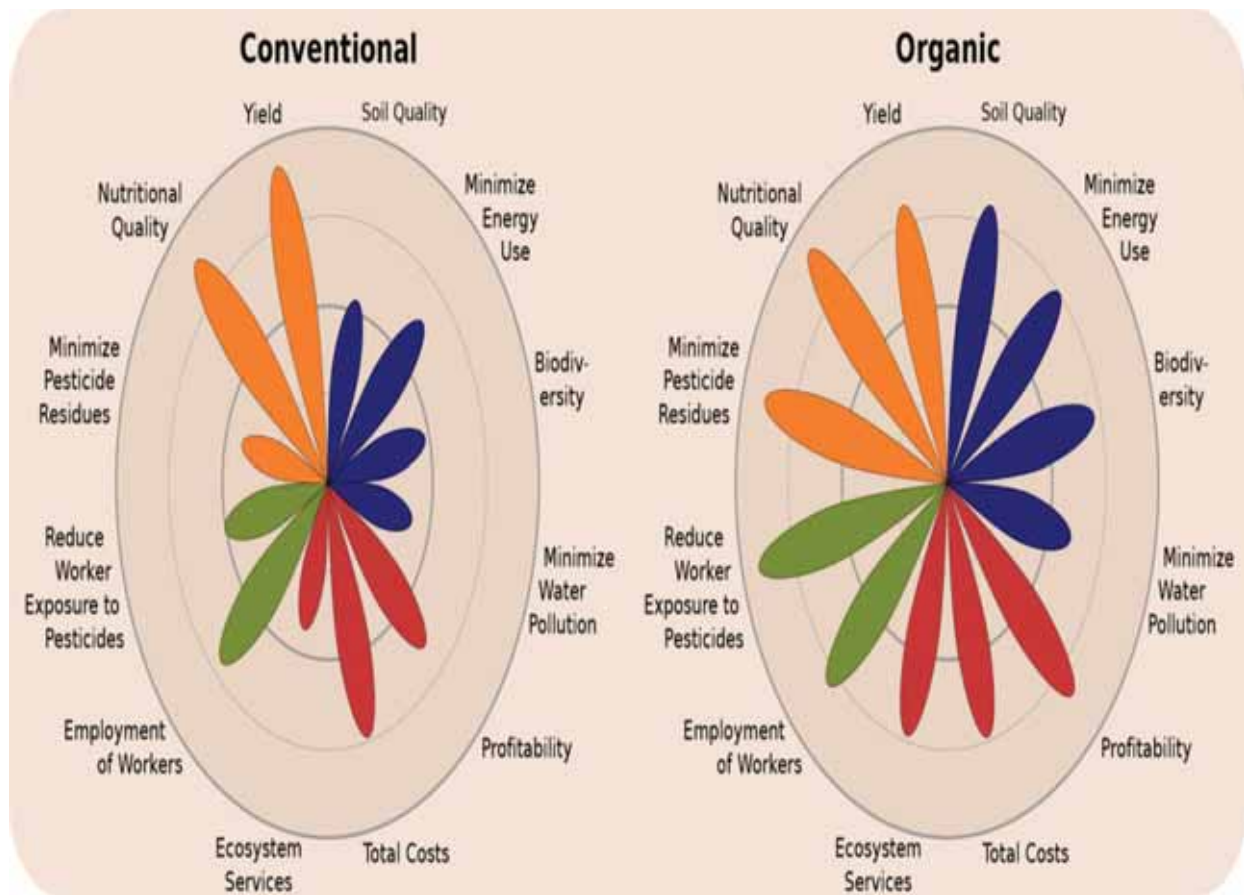


Fig 1.1.1 Difference between Conventional and Organic Farming

Health is the wholeness and integrity of living systems. It is not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being. Immunity, resilience and regeneration are key characteristics of health. The role of organic agriculture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings. In particular, organic agriculture is intended to produce high quality, nutritious food that contributes to preventive health care and well-being. In view of this it should avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects.

2. Principle of ecology

Organic Agriculture should sustain, emulate and work with the living ecological systems and cycles. This principle roots organic agriculture within living ecological systems. It states that production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case

agriculture, care must be taken. This principle states that precaution and responsibility are the key concerns in management, development and technology choices in organic agriculture. Science is necessary to ensure that organic agriculture is healthy, safe and ecologically sound. However, scientific knowledge alone is not sufficient. Practical experience, accumulated wisdom and traditional and indigenous knowledge offer valid solutions, tested by time. Organic agriculture should prevent significant risks by adopting appropriate technologies and rejecting unpredictable ones, such as genetic engineering. Decisions should reflect the values and needs of all who might be affected, through transparent and participatory processes. In totality organic farming system aims at a sustainable production system based on utilization of natural processes.

The basic characteristics of organic farming are as follows:

- It relies primarily on local, renewable resources;
- It makes efficient use of solar energy and the production potential of biological systems;
- It maintains the fertility of the soil;
- It maximises recycling of plant nutrients and organic matter;
- does not use organisms or substances foreign to nature (e.g. GMOs, chemical fertilisers or pesticides);
- It maintains diversity in the production system as well as the agricultural landscape;
- It gives farm animals life conditions that correspond to their ecological role and allow them a natural behaviour.

Scope and Opportunities in Organic Farming:

According to the Research Institute of Organic Agriculture (FiBL), Frick, Switzerland and International Federation of Organic Agriculture Movements (IFOAM), Germany, survey (The World of Organic Agriculture - Statistics and Emerging Trends 2015) on certified organic agriculture worldwide, nearly 43.1 million ha land is being certified as organic in 170 countries, constituting 1% of the total agricultural land of the countries under study. The regions with the largest areas of organic agricultural land are Oceania (17.3 million ha) and Europe (11.5 million ha). Latin America has 6.6 million ha followed by Asia (3.4 million ha), North America (3 million ha) and Africa (1.2 million ha). The countries with the most organic agricultural land are Australia (17.2 million ha), Argentina (3.2 million ha), and the United States (2.2 million ha). Apart from agricultural land, there are further organic areas, most of these being areas for wild collection. Other areas include aquaculture, forests, and grazing areas on non-agricultural land. The areas of non-agricultural land constitute more than 35 million hectares. In total, 78 million hectares (agricultural and non-agricultural areas) are organic. There were almost 2 million producers in 2013. Thirty-six percent of the world's organic producers are in Asia, followed by Africa (29 %) and Europe (17%). The countries with the most producers are India (650'000), Uganda (189'610), and Mexico (169'703). About a quarter of the world's agricultural land (11.7 million ha) and more than 80 percent (1.7 million) of the producers are in developing countries and emerging markets. Land use details were available for almost 90 percent of the organic agricultural land. Unfortunately, some countries with very large organic areas, such as Australia, Brazil, and India had little or no information on their land use. Almost two-thirds of the agricultural land was grassland/grazing areas (27 million ha). With a total of at least 7.7 million hectares, arable land constitutes almost 20 percent of the organic agricultural land. An increase of almost three percent over 2012 was reported. Most of this category of land is used for cereals including rice (3.3 million hectares), followed by green fodder from arable land (2.4 million ha), oilseeds (0.8 million ha), vegetables (0.3 million ha), and protein crops (0.3 million ha). Permanent crops account for seven percent of the organic agricultural land, amounting to 3.2 million ha. The most important permanent crops are coffee (with more than 0.7 million ha, constituting almost one quarter of the organic permanent cropland), followed by olives (0.6 million ha), nuts and grapes (0.3 million ha each), and cocoa (0.2 million ha).



Fig 1.1.1 Organic Farming

Global Organic Produce Market:

Global markets of organic food and drinks reached 72 billion US dollars in 2013. Revenues have increased almost five-fold since 1999. Organic product sales have increased at a healthy rate over the last decade, and Organic Monitor predicts growth will continue in the coming years. Europe and North America generate over 90 percent of global sales. Although Asia, Australasia, Latin America, and Africa have become important producers of organic agricultural crops, their markets for organic products remain small. In 2013, the countries with the largest organic markets were the United States (24.3 billion euros), Germany (7.6 billion euros), and France (4.4 billion euros). The largest single market was the United States (approximately 43 percent of the global market), followed by the European Union (22.2 billion euros, 40 percent) and China (2.4 billion euros). The highest per-capita consumption with more than 100 euros was in Switzerland, Denmark, and Luxembourg. The highest market shares were reached in Denmark (8 percent), Switzerland (6.9 percent) and Austria (6.5 percent).

Organic Standards and Regulations

According to the Research Institute of Organic Agriculture (FiBL), Frick, Switzerland, survey on organic rules and regulations, there are 82 countries with an organic regulation. Sixteen countries are in the process of drafting legislation. Participatory Guarantee Systems (PGS) are locally focused quality assurance systems. They certify producers based on the active participation of stakeholders and are built on a foundation of trust, social networks, and knowledge exchange. It is estimated that 38 countries worldwide have functional PGS initiatives in place. Additionally at least in 17 more countries PGS is currently under development. It is estimated that more than 46'000 small operators are currently involved in PGS worldwide, of which more than 17'000 are certified through PGS. It is also estimated that PGS certified producers are currently managing organically a total of at least 49'803 hectares of agricultural land.

Organic Farming in India



Fig 1.1.1 Organic Farming in India

In India modern organic agriculture came into existence with the growing demand for organically grown food and fiber in the western world. Soon civil society organizations joined the movement for its potential in sustaining the soil health, preventing contamination in surface and ground water aquifers and ensuring safe and healthy food. To support the export prospects, Ministry of Commerce launched the "National Programme on Organic Production" (NPOP) defining the National Standards for Organic Production (NSOP) and the procedure for accreditation and certification in 2000. India now has 30 accredited certification agencies for facilitating the certification to growers. For area expansion and technology transfer, Ministry of Agriculture launched a National Project on Promotion of Organic Farming (NPOF-DAC) and earmarked funds for setting up of organic and biological input production units, vermi-compost production units and for organic adoption and certification under various schemes such as NHM (now MIDH), NMSA and RKVY. To empower farmers through participation in certification process and to make the certification affordable for domestic and local markets, Ministry of Agriculture has also launched a farmer group centric organic guarantee system under PGS-India programme.

India has brought 4.72 million ha area under organic certification process till year 2014, which includes 0.6 million ha of cultivated agricultural land and 4.12 million ha of wild harvest collection area in forests. Growth of area under organic farming during different years is presented in Fig. 1a, 1b and 1c. During 2012-13, India exported 165262 MT of organic products belonging to 135 commodities valuing at US\$ 312 million (approximately INR 1900 crore). Domestic market is also growing at an annual growth rate of 15-25%. As per the survey conducted by ICCOA, Bangalore, domestic market during the year 2012-13 was worth INR 600 crore.

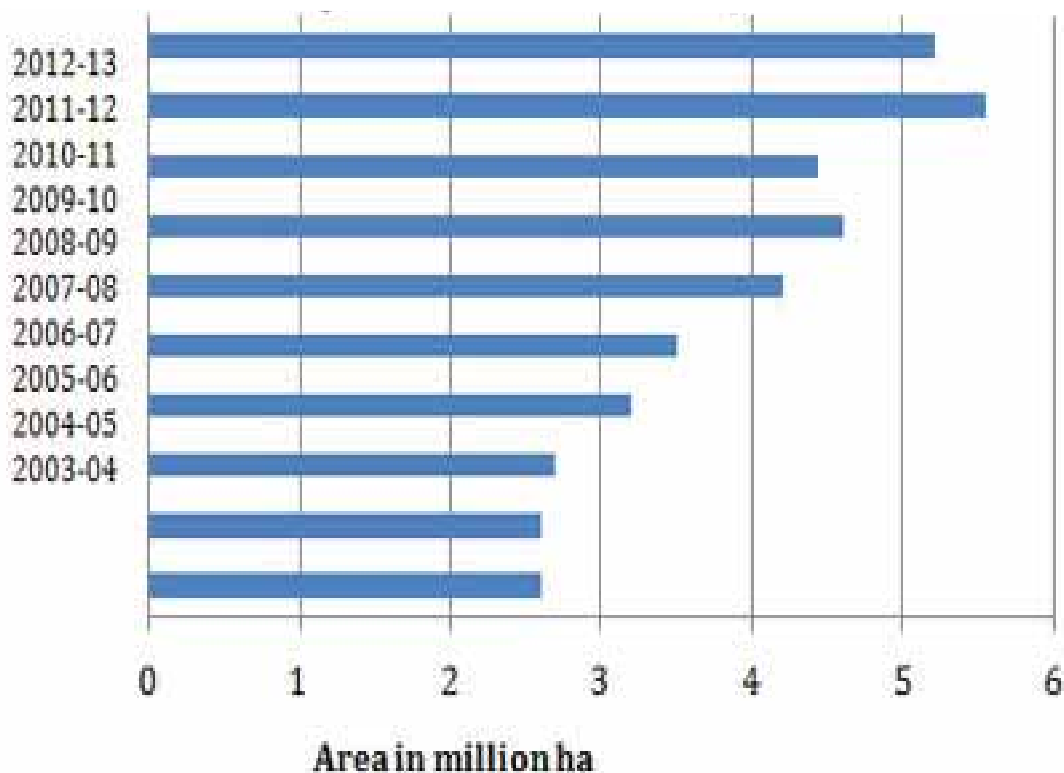


Fig 1.1.1 Total area under cultivation

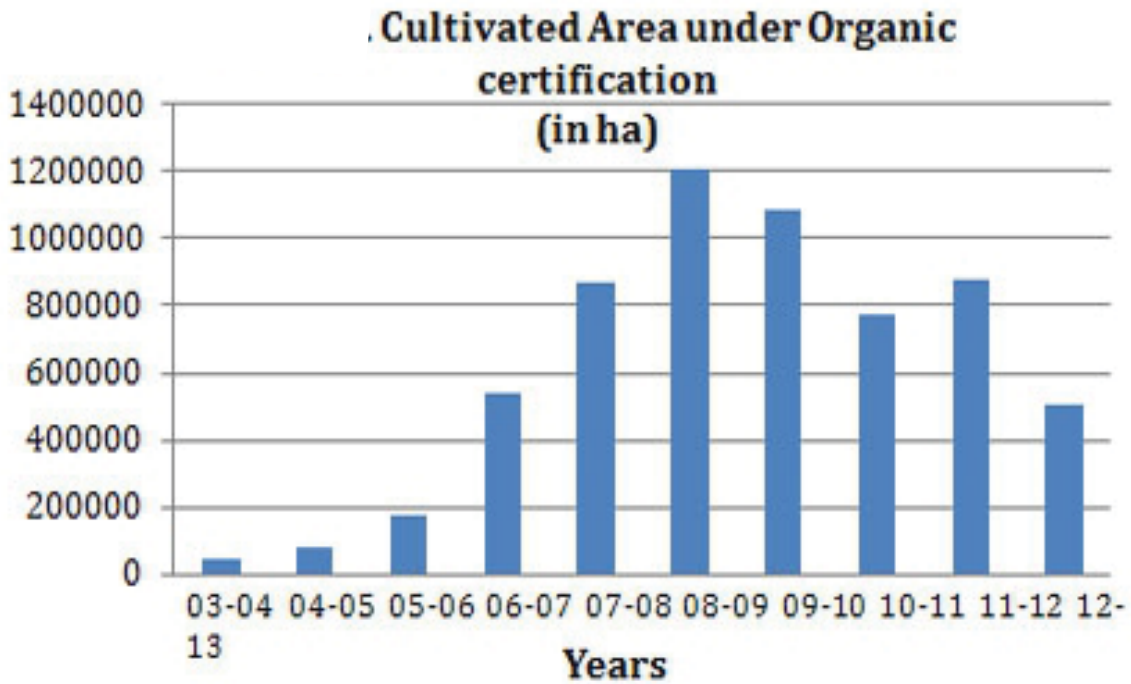


Fig 1.1.1 Cultivated area under certification

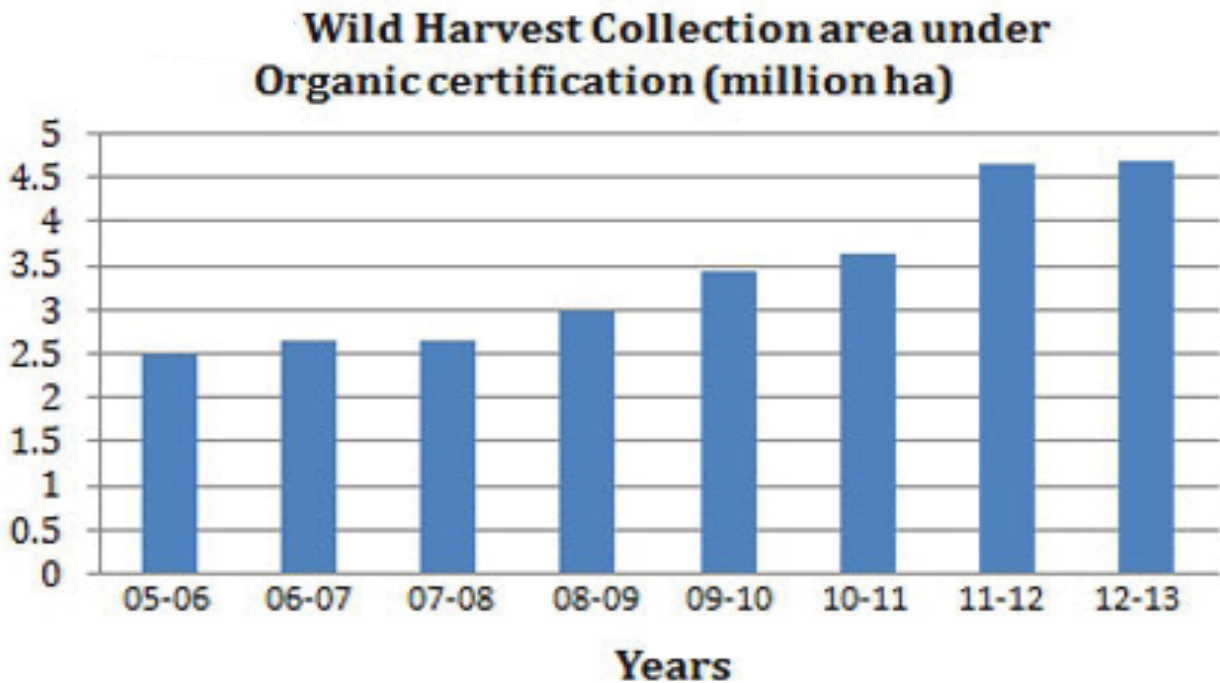


Fig 1.1.1 Harvest collection under Organic Certification