

India towards organic farming

Dinesh Kumar¹

Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi 110 012

Sustainable rural development is essential for all-round development of the country. This development should also support the rural people with adequate supply of nutritious food, proper habitat and adequate clothing. Further, proper utilization and conservation of limited natural resources are also necessary for sustainable development. If these natural resources are depleted or over-exploited, world food security may be in great danger. Under such a scenario, organic farming could prove useful in conserving the natural resources, enhancing farm income and facing the challenges posed by climate change in agriculture.

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Depletion and degradation of natural resources

Excessive exploitation of natural resources in agriculture and allied sector has led to many modern day problems. Indiscriminate and injudicious use of chemical pesticides and fertilizers agricultural production has led to many adverse effects on soil, water and environment. The quality of soil, water and air has thus declined, making it extremely difficult to maintain the sustainability of current agricultural production.

Increasing need for organic farming in India

In conventional or modern farming, the decline in factor productivity in crop production is posing a serious challenge. For instance, the crop yield obtained by applying 'x' quantity of fertilizer 20 years before now requires '2x' quantity of fertilizer. Similarly, to control pests, more number of pesticides' sprayings are required than before. This increases the cost of crop production, resulting in a reduction in farm income. Also, due to the ill effects of several types of climate changes, agricultural production is affected or stagnated and decreased in agricultural income. Biodiversity is

steadily decreasing due to the adoption of conventional methods in agriculture. The reduced above-ground diversity of crops has resulted in reduced soil biodiversity as well. Also, due to the use of synthetic chemicals in soil, the soil biodiversity has further declined. The reduced biodiversity above or below the ground could be a serious threat to sustain the crop production. Thus, maintaining biodiversity is of utmost importance for proper health of soil and the scavenging of essential nutrients.

Residues of pesticides and other toxic chemicals are found in many food produced by chemical (conventional) farming. Sometimes, the level of these residues is several times more than the permissible limit in food items. Many incurable diseases occur in animals and humans by continuously consuming such foods.

A few years ago, a joint study of scientists from India and England have shown that the end of Indus Valley Civilization (2600–1900 BC) was caused mainly by climate changes. At present, untimely floods, famines and sea level rise, etc. are the major indicators of climate change in many countries of the world. Climate

change can become a serious challenge for agriculture in the future. The frequency of floods and droughts is expected to increase in future. It can adversely affect crop production and productivity, therefore, there is a need to bring changes in crop management in the light of the ensuing climate changes.

Defining organic farming

It is the method of agriculture in which the use of synthetic fertilizers, pesticides (insecticides, fungicides, bactericides, herbicides) and artificial growth regulators is strictly prohibited. The use of transgenic (transgenic) crops or their varieties is prohibited. It has also minimum use of external inputs and maximum use of on farm resources preferred. Further, the emphasis is given for maintaining or enhancing soil fertility/ health. For this, the emphasis is on the adoption of crop rotations, green manures, composts and Organic farming leads to enhancement and sustainability in crop, human, soil and environmental health.

Key principles of organic farming

The principle aims of organic agriculture for production and

processing (IFOAM 2002) are:

- To produce sufficient quantities of high quality food, fibre and other products.
- To work compatibly with natural cycles and living systems through the soil, plants and animals in the entire production system.
- To recognize the wider social and ecological impact within the organic production and processing system.
- To maintain and increase long-term fertility and biological activity of soils using locally adapted cultural, biological and mechanical methods as opposed to reliance on inputs.
- To maintain and encourage agricultural and natural biodiversity on the farm and surrounds through the use of sustainable production systems and the protection of plant and wildlife habitats.
- To maintain and conserve genetic diversity through attention to on-farm management of genetic resources.
- To promote the responsible use and conservation of water and all life therein.
- To use, as far as possible, renewable resources in production and processing systems and avoid pollution and waste.
- To foster local and regional production and distribution.
- To create a harmonious balance between crop production and animal husbandry.
- To provide living conditions that allow animals to express the basic aspects of their innate behaviour.
- To utilize biodegradable, recyclable and recycled packaging materials.
- To provide everyone involved in organic farming and processing with a quality of life that satisfies their basic needs, within a safe,

secure and healthy working environment.

- To support the establishment of an entire production, processing and distribution chain which is both socially just and ecologically responsible.
- To recognize the importance of, and protect and learn from, indigenous knowledge and traditional farming systems.

Status in the world and India

In organic farming, 28 lakh farmers were engaged in on 710.5 lakh ha of land in 186 countries in 2018. Organic farming is also expanding in India. In the year 2019-20, there was a total certified area of 36.7 lakh ha under organic farming in India. Out of the total certified area, the area under cultivation and wild harvest were 23.0 and 13.7 lakh ha in 2019-20, respectively. It is evident from the data given in Table 1 that the area under wild harvest is declining and increasing under cultivation with time. 27.5 lakh tonnes of organic products were produced in the year 2019-20. Madhya Pradesh, Himachal Pradesh, Rajasthan, Uttarakhand, Kerala, Karnataka, Assam, Sikkim and other north-eastern states are the major states adopting organic farming. This includes soybeans, cotton, sugarcane, oilseeds, pulses, basmati rice, spices, tea, fruits, dried fruits, vegetables, coffee and value-added products derived from them.

The total volume of export (organic products) from India (2019-20) was 63.9 lakh tonnes, earning about INR 4,686 crore (689 million USD). Such organic products were exported to the USA, European Union, Canada, Switzerland,

Australia, Japan, Israel, UAE, New Zealand, Vietnam, etc. According to APEDA, processed foods including soya meal (45.9%) lead among the products, followed by oilseeds (13.2%), plantation crop products such as tea and coffee (9.6%), cereals and millets (8.2%), spices and condiments (5.2%), dry fruits (5.0%), sugar (3.9%), medicinal plants (3.8%) and others in terms of export value realization during 2019-20.

Enhanced support from the Governments in India

The Government has also launched several new schemes for the popularization of organic farming and equipping the farmers with the latest developments in this field. The first major step taken by the Government was implementation of the National Programme for Organic Production (NPOP) in 2001. The NPOP involved the accreditation programme for certification agencies, norms for organic production and promotion of organic farming in the country. Another big step taken by the Indian Government was establishment of the National Centre of Organic Farming (NCOF) in Ghaziabad (UP) in 2004. This centre has implemented the National Project on Organic Farming (NPOF) at Ghaziabad and its eight regional centres at Bangalore, Bhubaneswar, Panchkula, Ghaziabad, Imphal, Jabalpur, Nagpur and Patna. The NCOF is also responsible for implementation of the Participatory Guarantee System (PGS), a free certification programme for organic farming, particularly suitable for domestic market. For online operation of PGS certification system, a web portal has

Table 1. Organic farming in India

Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-2018	2018-19	2019-20
Total production (mt)	3.88	0.69	1.34	1.24	1.10	1.35	1.18	1.70	2.64	2.75
Total area under Certification (including wild harvest)-mha	4.43	5.55	5.21	4.72	4.90	5.71	4.45	3.56	3.43	3.67
Total area under certified organic cultivation - mha	0.24	1.08	0.50	0.72	1.20	1.49	1.45	1.78	1.94	2.30
Total area under certified wild harvest - mha	4.19	4.47	4.71	3.99	3.70	4.22	3.00	1.78	1.49	1.37

also been started and can be accessed at www.pgsindia-ncof.gov.in.

The Government of India is promoting organic farming through different schemes or programmes also, such as National Mission for Sustainable Agriculture (NMSA)/ Paramparagat Krishi Vikas Yojana (PKVY), Rashtriya Krishi Vikas Yojana (RKVY), Mission for Integrated Development of Horticulture (MIDH), National Mission on Oilseeds & Oil Palm (NMOOP), and Network Project on Organic Farming of ICAR. The Ministry of Agriculture & Farmers Welfare is promoting Organic Farming as a sub-component under NMSA. Under the scheme, financial assistance is provided for setting up of mechanized fruit and vegetable market wastes, agro wastes compost units and setting up of liquid carrier-based biofertilizer and biopesticide production units. The organic farming is also being promoted under Saansad Adarsh Gram Yojana in the selected villages adopted by the Hon'ble MPs in their respective constituencies.

The Indian Council of Agricultural Research (ICAR) has also launched a new research Institute named 'National Organic Farming Research Institute' (ICAR-NOFRI) in Gangtok (Sikkim), 2016. The major mandate of this Institute is to conduct basic, strategic and adaptive research on efficient, economically viable and environmentally sustainable organic farming systems for improving productivity, resource use efficiencies and quality of produce. Another important step in the field of organic farming was the declaration of Sikkim as an organic state by the Hon'ble Prime Minister of India, Shri Narendra Modi on 18 January 2016. Since then, most of the north-eastern states are interested to promote organic farming in Sikkim way. Furthermore, a Central Sector Scheme namely, Mission Organic Value Chain Development for North Eastern Region has been launched for promoting organic farming in the North Eastern Region with an outlay of ₹ 400 crores for three years from 2015-16 to 2017-18.

The Government of India is also

Constraints in India

The important constraints faced by farmers and other stakeholders in the adoption and spread of organic farming in India are listed below:

- Shortage of organic seeds.
- Lack of efficient marketing system from farmer to consumer.
- Lower crop yields in some cases.
- Low income during the transition/ conversion period hinders the spread of organic farming.
- Non-availability of premium prices of organic products to the farmers.
- Lack of technology packages for varying crop, soil and climatic conditions.
- Limited availability of organic manures and biofertilizers.
- Complexities in certification processes, like, PGS (Participatory Guarantee System) and third party certification.
- Weak linkages among the organizations in the organic sector.
- Lack of infrastructure.
- High cost of certain inputs.

focusing on increasing the area under organic farming in the country. This task is being achieved through Paramparagat Krishi Vikas Yojana (PKVY), launched by the Government in 2015. The important aim of the PKVY was to form 10,000 clusters in three years and bring about five lakh acres of agricultural area under organic farming. Fifty or more farmers can form a cluster having 50-acre land to take up the organic farming under this scheme. Every organic farmer is being provided ₹ 20,000 per acre support for seed to harvesting of crops and to transport produce to the market. To increase the profit from organic crops, it is also important to grow them by scientific methods. In this direction, the ICAR's Network Project on Organic Farming, Modipuram (UP) is actively evolving the technology packages for cultivation of organic crops suitable for different parts of the country. Besides this, several other ICAR Institutes and State Agricultural Universities (SAU) are promoting organic farming through their research and extension activities.

To conduct research, teaching and extension activities in organic farming, the CSK Himachal Pradesh Agricultural University, Palampur has established a new 'Department of Organic Agriculture' in 2009 for the benefit of farmers and others concerned. On the same line, Punjab Agricultural University has also established a new 'School of Organic Agriculture' under the 'College of

Agriculture' in 2017 to carry out multidisciplinary research, training and extension activities for the development and dissemination of scientific knowledge on organic and integrated agriculture. Thus the Central Government and many State Governments have provided excellent support to promote organic farming in the country.

Organic farming and sustainable rural development

There is no doubt that the development of agriculture is necessary for rural development in India as India is basically an agricultural country. It is thus quite obvious that rural development is not possible in India without agricultural development. One of the main reasons behind this is that more than two-thirds of the country's population still lives in villages and agriculture is directly or indirectly is the basis of livelihood of most people. But the present method of agriculture is not able to provide sufficient income to most of the farmers. The existing farming practices may not be sustainable and need to be changed. It is hypothesized that adoption of alternative practices, such as organic farming may overcome the constraints of conventional farming. However, some people also criticize organic farming for its low yields. According to them, this farming will not be able to supply sufficient amount of food to the growing population. However, the question is

not how do we turn the whole world into organic farming tomorrow, but how will we face the major challenges associated with our existing food system. Climate change, biodiversity loss, water scarcity, poverty and malnutrition are some of the challenges which are increasing day by day. Organic farming can play an important role in solving the above problems.

Productivity of organic crops

Several agricultural research results conducted in the world and India have shown that the crop productivity under organic systems is generally 10-35% lower as compared to the conventional farming, especially in the initial 2-3 years of conversion. In rainfed areas, there is very little reduction in organic production as compared to the irrigated areas. This is because the modern inputs (artificial fertilizers and chemicals) have already been used less frequently in the rainfed areas and at the same time, by adopting organic farming, the organic matter in the soil increases, which increases the ability of the crops to bear the drought. Thus crop production is not affected substantially in rainfed/ dryland areas. In long term, many research results have found no difference between conventional and organic agricultural yields. Long-term research was conducted on the Basmati rice-wheat crop rotations on organic farming at ICAR-Indian Agricultural Research Institute, Pusa, New Delhi. The results found that the average yield over the ten years of basmati rice grown by the organic method was 4.5 t/ha, while the conventional method yielded almost the same yield. ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut (Uttar Pradesh) is running a network project on organic farming in various states of the country. On completion of 8 crop-cycles (8 years), the following results have been achieved:

- The yield obtained from organic farming of basmati rice, soybean, garlic, peanuts, cauliflower and tomato crops was 4-6% higher than the yield obtained from their conventional farming.
- The yield obtained from organic

farming of moong, onion, chilli, cabbage and turmeric crops was 7-14% higher than the yield obtained from their conventional farming.

- The yield obtained from organic farming of wheat, mustard, lentil, potato and rajma crops was 5-8% lower than the yield obtained from their conventional farming.
- The amount of bio-carbon increased by 22% in 6 years from organic farming.
- Due to organic farming, the number of micro-organisms was increased at all the centers of the project.

Quality of organic products

It has been proved and also a fact that organic products have better quality than the products obtained from conventional farming. Statistics of some research results are available. A brief description of the quality of the products obtained from organic farming is as follows:

- Organic substances contain more dry matter, minerals and anti-oxidizing elements.
- Organic animal products and their value-added products have higher unsaturated fatty acids than saturated fatty acids, whereas animal products derived from conventional methods have higher saturated fatty acids than unsaturated fatty acids. Thus, organic animal products are more beneficial for human health.
- 94-100% organic products have been found to be pesticide-free (safe foods).
- Organic vegetables have 50% less nitrate content which is beneficial for human health.
- Many research results prove that organic products are tastier than conventional agricultural products.
- Anti-oxidants are uniquely helpful in maintaining human health. Organic products have, on average, 50% more anti-oxidants content than conventional agricultural products.

Organic farming vis-à-vis climate change, environmental protection and soil fertility

As the organic matter and soil health in the soil is improved under organic farming resulting in increased water retention capacity of the soil which helps the crop to bear drought.

According to The Wisconsin Integrated Cropping System Trials (USA), organic farming yielded higher yields in drought years than conventional farming. Further, yields were equal in both organic and conventional farming systems when normal rainfall was observed. Research results show that water is also used efficiently in organic farming systems. By adopting organic farming, the amount of organic matter in the soil is increased resulting in an increase in its water holding capacity and ultimately the crop's ability to tolerate drought. Organic farming can contribute to the environment protection and soil fertility improvement in the following ways:

- Organic farming reduces emissions of greenhouse gases (methane, carbon dioxide, nitrous oxide, sulfur dioxide).
- Soil reduces nitrate leaching (leaching) - which improves ground water quality.
- Soils have long-term accumulation of carbon, which reduces the impact of climate changes.
- In organic farming, physical, chemical and biological properties of soil improve.

Enhanced biodiversity in organic farming

Organic farming leads to the all-round development of biodiversity. In organic farming, special emphasis is placed on crop diversification and crop rotations for nutrient and pest-management management that increase the biodiversity above and inside the soil. The number of friendly insects and other organisms living inside and outside the soil increases, while the number of organisms harmful to the crop decreases.

Special emphasis is placed on crop rotations in organic farming (Fig. 1). Pulses and legume crops should be included in these crop rotations. Also, green manure crops should be included from time to time. Crop rotations should include crops for which adequate marketing facilities are also available. The fertility of soil declines by continuously growing the same type of crops. Control of



Fig. 1. Crop diversification is the key for success of organic farming

insects, diseases and weeds also becomes a serious problem. For example, by continuously adopting the rice-wheat crop rotation, there is more growth of wheat (*gulli danda*) weed which adversely affects the yield of wheat. Some rice insect-pests can harm the wheat crop. Therefore, in such a situation the above problems can be solved by diversifying this crop rotation (rice-wheat).

If possible, green manure can be included in the crop rotations. Applying green manure increases the fertility of the land and also increases the production of the next crop. If the inclusion of green manure in the crop rotations is not possible, then dual-purpose pulses like moong, cowpea, urd, peas and guar etc. can be grown. After separating the pods from the above crops, their residues can be added to the soil. In this way, the inclusion of these dual-purpose pulses in the crop rotation will increase farmers' income and soil fertility.

Selection of crops in the crop rotation depends on the climate, soil, management and economic aspect. Production of crops is beneficial only under favourable conditions. The best evidence of crop adaptation is the general growth of the crop and its ability to yield an equally high yield. Apart from this, such crops should be included in the crop rotation which have adequate facility for marketing,

that is, there is good demand in the market for production and the farmer gets more profit by selling it. Adoption of crop rotation reduces risk, provides employment throughout the year, optimizes the use of resources, increases soil fertility and most importantly increases biodiversity.

Suitable crop rotations for organic farming

The organic crop rotation followed should be remunerative and sustainable. The Network Project on Organic Farming of ICAR have identified the following important cropping systems, which were found economically better or at par with conventional systems at different experimental stations in the country:

- Soybean - Berseem/ Mustard/ chickpea at Raipur, Chhattisgarh
- Tomato/ Cabbage – cauliflower – pea and maize – garlic at Bajaura, Himachal Pradesh
- Rice – wheat/ potato/ mustard/ lentil at Ranchi, Jharkhand
- Groundnut – rabi Sorghum, soybean – durum wheat, potato – chick pea, chillil+ Cotton and maize – chick pea at Dharwad, Karnataka
- Soybean – durum wheat/ mustard/ chick pea/ isabgol at Bhopal, M.P.
- Rice – durum wheat/ berseem, rice – potato – okra and rice – garlic,

sorghum – berseem, maize – berseem – maize + cowpea and sorghum + cluster bean – oats-cowpea at Ludhiana, Punjab

- Maize – cotton, chillies – onion and brinjal – sunflower at Coimbatore
- Sorghum – pea – okra at Modipuram, Uttar Pradesh

Nutrient management in organic crops

For nutrient management in organic farming, farmers should pay attention to the following facts:

- Use of any artificial or synthesized fertilizers is prohibited
- Including pulses and green manure crops in crop rotations
- Nutrient losses by erosion, leaching or volatilization should be reduced
- Heavy metals (mercury, cadmium, arsenic) should be prevented from entering the soil
- Correct pH value of the soil should be maintained
- Certain natural mineral fertilizers (gypsum, rock phosphate) can be used
- Use of compost, vermicompost, earthworm fertilizer is beneficial
- Use of crop residues
- Bio-fertilizers (*Rhizobium*, *Azospirillum*, *Azotobacter*, *Azotomonas*, Mycorrhiza, PSB, Blue-green algae in Rice, etc.).

Organic weed management

Weeds compete with the main crop for water, nutrients, air and light. They remove a lot of nutrients from the soil. They are also alternate host plants for different insect-pests and diseases causing microorganisms. Therefore, weed control is very essential to maintain soil fertility and soil productivity in organic systems. Chemical herbicides are not permitted in organic farming. Therefore, cultural methods such as tillage combined with irrigation timings, seeding rates and cultivar selection, use of weed-free seeds, cropping systems, use of animals, flooding, mulching, composting, hoeing, hand weeding, farmers' care and straw disposal, etc. can be adopted to manage weeds. A number of fungal and bacterial pathogens parasitizing different weeds can be utilized for the purpose. Organic

manures such as FYM or composts, if used, should not have any viable weed seeds (Fig. 2).

Management of insect-pests and diseases in organic crops

Adoption of crop rotations/diversification and biological control are often considered as a default strategy for managing insect-pests and diseases in organic farming. Sanitation can take on many forms such as deep ploughing of crop residues, destruction of nearby weed habitats, cleaning of accumulated weed seeds from the farm implements, sterilizing pruning tools etc. The pesticides permitted in organic farming fall predominantly in several classes' viz. Botanicals (rotenone, neem, pyrethrum etc.), biologicals (*Bacillus thuringiensis*), pheromones, and minerals (clay based materials like *surround*) etc. *Scialabba (1998) have suggested the following practices to control the insect-pests in organic farming:*

- Manipulation of crop rotations, to minimize survival of crop-specific pests (in the form of, for example, insect eggs, fungi) which can infest the next crop
- Strip cropping, to moderate spreading of pests over large areas
- Manipulation of pH-level or moisture level of the soil (in irrigated areas)
- Manipulation of planting dates, to plant at a time most optimal for the crop, or least beneficial for the pest
- Adjustment of seeding rates, to achieve an optimal rate given the need to crowd out weeds or avoid insects
- Use of appropriate plant varieties and livestock breeds for local conditions
- Use of stock burying programmes, which minimize the import of diseases onto the farm
- Limiting field size, which aids in weed management by livestock
- Biological control methods, to encourage natural enemies of pests by providing habitat (for example hedges) or by breeding and releasing them in areas where they are required
- Trapping insects, possibly with the use of lures such as pheromones



Fig. 2. A well rotten farmyard manure suitable for organic farming

- Biological pesticides (for example, derris dust, pyrethrum, rotenone) of which the active ingredient is short-lasting, and which may be produced locally.

Organic standards

Standards of organic production means the adoption of rules and regulations based on which organic produce is produced or organic products are made or processed. How to label the products? What are the rules for conversion from conventional farming to organic farming? What methods and materials should be used in crop production? All these things are mentioned in organic standards.

Certification in organic farming

Organic certification is a process certification intended for producers of organic food and other organic agricultural products. In general, any business directly involved in food production can be certified, including seed suppliers, farmers, food processors, retailers and restaurants. Requirements vary from country to country, and generally involve a set of production standards for growing, storage, processing, packaging and shipping that include:

- Avoidance of synthetic chemical inputs (e.g. fertilizer, pesticides,

hormones, antibiotics, food additives, etc) and genetically modified organisms.

- Use of farmland that has been free from chemicals for a number of years (often, two or more).
- Maintaining strict physical separation of organic products from non-certified products.
- Processing methods allowed in organic are physical, mechanical and biological with the exclusion of all chemicals, irradiation and chemical driven processes. Exceptions are some additives, processing aids and preservatives as per the approved list
- Keeping detailed written production and sales records (audit trail);
- Undergoing periodic on-site inspections (verification of process).

Prospects of spreading organic farming in India

At present, organic farming is being adopted on limited land in the country. It is not possible to convert all the cultivated land of the country into organic farming as conventional farming is also necessary to maintain the continuity of food security. Organic farming can be adopted in select lands and regions of different states. Especially in areas where chemical fertilizers and artificial pesticides are already in minimal use

in farming. On the other hand, soil and environmental health can be increased by adopting organic farming even in irrigated areas where the use of chemical fertilizers and pesticides is relatively high and the fertile capacity of the land has also decreased. Apart from crop production (agriculture), animal husbandry, poultry, beekeeping, fisheries and dairy, etc. can also be adopted through organic methods. There is a lot of potential for increasing the income of farmers. Since certification is an important process in organic production, farmers have to spend a lot of money. Therefore, there is an urgent need to reduce the cost of certification so that small and marginal farmers can also produce organic produce. This will encourage organic farming. Also, in the first few years, especially in the transition or conversion period, organic farming produces less yield. Therefore, during this initial period, farmers should also get a fair compensation from the Government.

Organic crop production and farm income

Adequate opportunities are available to increase the income of villagers by adopting organic farming. Organic farming is one of the environment-friendly approaches that reduce the dependency on external inputs and gives the optimum productivity by making the best use of ecological principles and processes, which eventually leads to the reduced cost of crop cultivation. Further, the organic products are expected to fetch premium price (at least 25% more) over conventional ones and therefore should give more returns to the farmers. It also brightens the prospects of export of organic food items. At the moment the organic products have a huge demand in export markets, especially those of European and North American countries, and they fetch a sizeable premium as compared with conventional farm products. India exports soybean, cotton, sugar, oilseeds, pulses, basmati rice, spices, tea, fruits, dried fruits, vegetables, coffee and value-added products

Job opportunities in organic farming

- Employment is possible through organic seed production. Since the availability of organic seeds is very low, farmers can increase their availability by producing seeds, which will increase their income as well as increase the production area of organic farming.
- Raw materials obtained from organic farming can be transformed into value-added product at the village level. Farmers can earn more profits by processing their organic products as a primary food. Employment opportunities and income can be increased again by setting up processing units related to fruits, vegetables and pulses etc.
- Many inputs are used in organic farming. For example, organic farming requires compost, vermicompost, gobar gas slurry, bio-pesticides, bio-fertilizers etc. Therefore, the above inputs can be produced and marketed by the villagers themselves so that many rural youths can get employment.
- If the villagers are given appropriate training on organic farming, it will develop their skills which will eventually increase their confidence and they will be able to create employment.
- Rural producers can also get employment by marketing their products themselves.
- Organic certification also provides employment to many individuals.
- Since special emphasis is placed on crop-diversification and crop-rotations in organic farming, hence the availability of employment opportunities happens throughout the year.

derived from them through organic means. Also, due to crop diversification, the work of sowing, crop management and harvesting of different crops keeps going on throughout the year, which increases employment opportunities and increases the income of villagers.

SUMMARY

Organic farming reduces dependence on external farm inputs, reduces energy use, and increases agricultural income. Soil, water, air and environmental health improve by the adoption of organic farming. It further improves the soil's internal and external biodiversity, which helps in improvement of soil health. Crop productivity is less in the few initial years. If suitable cropping methods and proper crop management are adopted in organic farming, then crop yield equals to or become higher than the conventional farming. It is necessary to adopt proper crop rotations and diversification to get good yields. Also, proper nutrient, pest- and disease-management are necessary.

Organic farming can be successful adopted in certain areas, climates and conditions in India. With the

increasing awareness of consumers about the safety and quality of organic foods, given the long-term sustainability of the farming system and the evidence of being equally productive, organic farming is going to be adopted by a greater number of farmers. The domestic, as well as international market of organic products has been growing quite rapidly in India. Looking at its economic, social, health and environmental benefits, it can be said that there is immense potential for its contribution to sustainable rural development in the country. A great opportunity for employment of rural youth exists in the production, processing and marketing of organic products and inputs. However, many types of obstacles are faced by farmers and other stakeholders in organic farming and it is also important to overcome them. It can be easily realized by looking at the number and interest of farmers in India that India is slowly but steadily moving towards organic farming.

¹Principal Scientist. Corresponding author's dineshctt@yahoo.com