Organic Farming: Path for Sustainable Ecosystem

Discussion Paper 17

MANAGE- Centre for Agricultural Extension Innovations, Reforms, and Agripreneurship (CAEIRA)

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About the Publication

The research report is based on the research conducted by Ms. Sandhya Kumari V as MANAGE Intern under the MANAGE Internship Programme for Post Graduate students of Extension Education.

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Director General's Message

Smt. G. Jayalakshmi, IAS
Director General, MANAGE

As a completely natural and sustainable farm management practice, organic farming is based on unique values. In other words, organic farming is not only a farm practice but also a philosophy of working together with nature. As a holistic farm management approach, organic farming aims to create a socially, environmentally, and economically sustainable food production system. More precisely, organic farming is based on managing the agro-ecosystem rather than relying on external farming inputs, such as pesticides, artificial fertilizers, additives, and genetically modified organisms.

This present study emphasis on the importance of Organic farming, demand for organic products among the urbanites, the organization/institutes supporting organic farming and the perception of organic farmers on organic farming, problems faced by organic farmers and organic certification in Bengaluru, Karnataka

At present with the growing health consciousness consumers are in need for organic product but they step back due the high price of the produce, mistrust and lack/unaware of information on the products. Organizations/institutions supporting organics have set goals with their respective objectives and are working towards achieving it.

The overall study showed that organic farming is in its nascent stage of development and has more scope and potential for development. Efficient working and implementation of all the organizational/ institutional projects by integrating all the sectors shall increase the profit of the organic farmers and also afford a common man to buy organic products and this overall leads to a healthy sustainable ecosystem.

I congratulate Ms. Sandhya, MANAGE Intern and M.Sc. scholar from Punjab Agricultural University for taking up the study "Organic Farming: Path for Sustainable Ecosystem" and carrying out good research through field analysis.

(G. Jayalakshmi)

PREFACE

Organic Agriculture has always been India's inherent advantage and strength. The shift in the global consumption patterns, health awareness among the consumers and the increasing significance of sustainability is now putting organic products to the forefront locally, nationally and also at international level.

With organic farming gaining the momentum and mounting demand for the organic products in the market, the present study is undertaken to understand the scope and potential for the development of organic farming among the farming community. The challenges faced by the organic sector at various levels has been emphasized. The demand for the organic products among the urbanites dwelling in the Bengaluru city and the reasons affecting the consumer behavior towards these products were analyzed in this study. Efforts have been made to highlight various organizations/ institutions working towards promoting organic cultivation among the farming community. The study also focused on analyzing the farmer's perception, knowledge level and awareness related to organic farming and certification.

This study would be of utmost importance to the research scholars to further take up the study beyond the Bengaluru city and for policy makers to frame new policies for betterment of the organic farmers. Rural youth interested towards taking up the organic farming or searching for entrepreneurial opportunities in this sector can make use of the information provided in this discussion paper.

Dr. Saravanan Raj
Director (Agricultural Extension)

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Abstract

The threat to chemical farming has shed light on the direction of organic farming and is the best natural tool to fight it. And before the ecosystem falls out of our hand, it is time to begin an ecological revolution. Organic farming is nature's way of farming with the adoption of our non-synthetic traditional agricultural knowledge i.e. farmer is just creating a composure environment where crops can grow. This farming method can overcome the ill effects caused by over the adoption of chemical farming and it shall increase the agricultural production and productivity in a healthy way without affecting the ecosystem balance for the growing population.

As we cannot immediately & completely shift to organic farming, it has to be adopted keeping the country's food security in mind and this has to be taken in stages. We are in the nascent stage with the success of "Sikkim as a fully organic state", this is encouraging rest of the country to fight against the chemical/synthetic farming. The basic principles of organic farming are the principle of health, ecology, fairness and care. The advantages of organic farming are: it creates a natural level resistance to plant pest & disease, gives an opportunity for specialization, supports healthy soil and pollinators, no worry of GMO, healthy working environment to the farmer, creation of farmer own input at farm and etc. As India stands 9th and 1st in terms of organic farming land and number no of producers in the world, respectively (IFOAM, 2019). The total production and export are 2645315.67 tons and 614089.61 tons, respectively (2018-19, APEDA), respectively.

Farmers and companies are under strict Government approved practices and regulation to produce certified organic products with the use of renewable resources and they need to take regular certification and inspection to maintain the quality. In India, this comes under two management systems i.e., National Programme on Organic Production (NPOP) and Participatory Guarantee System-India (PGS-India) and the area under organic certification is 3.566 million ha (2018-19, APEDA). Along with these two-system government has a handful of projects, schemes and programmes for crawling to the next stage. The perfect dissemination and implementation from consumers to producers need an extension to play its roles and methods to reach and help at every corner. In this regards, the study has been conducted in Bengaluru, Karnataka with three objectives- to identify demand for organic products from urbanites, study on organizations/institutions supporting the organic farmer and the perception of organic farmers towards organic farming and certification.

Primary data has been collected through structure and unstructured questionnaire according to objectives from the respondents and service provider of selected organizations/institutes and the results were analysed. The study found that consumers are in need of the organic product but they step back due to the high price of the produce, mistrust and lack/unaware of information on the products. Organizations/institutions supporting organics have set goals with their respective objectives and are working towards achieving it. Further, Organic producers face the problem more in the requirement of labour, control of weeds & marketing. And while coming to approval, most farmers are aware and adopted the certification. The construction of an improved organic bridge

between consumers, organizations/institutions and producers shall increase the profits of farmers with a better quality of soil and working environment, consumers can afford to buy chemical-free healthy products at a considerable price and as an overall result, this system will lead to a healthy sustainable ecosystem.

Executive Summary

Organic farming is not new to India but it lost its essence due to the era of Green Revolution during the time of crisis and moreover, the Green Revolution was important then but now Organic Revolution is vital. "The health of the soil, plant and man is one and indivisible" said by Sir Albert Howard, father of modern organic agriculture, as stated by him it is true that along with soil our health quality has also receded over the decades and also proves that "Healthy Soil=Healthy Food=Healthy People" said by J I Radole. Organic farming is nature's own system following the rules of nature for self-sustainability and the principles in organic farming are the principle of health, ecology, fairness and care i.e. with the concept of 'live and let live' showing a positive effect on the ecosystem.

Presently, India ranks 9th in terms of World's Organic Agricultural land, producing a variety of different products in different zones and 1st in terms of the total number of producers (IFOAM, 2019). By adopting the concept and principles of organic farming, the ultimate produce obtained is pesticide-free, environment friendly, reduce the risk of chronic disease risk and safer than conventional products. Organically cultivated foods are raised with manure and compost, weeds, pests & diseases are controlled manually by natural methods. Whereas, animals are organically fed & healthily raised, free from hormones and GMO. The organic production in India comes under two management heads, they are National Programme on Organic Production (NPOP) and Participatory Guarantee System-India (PGS-India).

A total of 3.566 million ha area is under the organic certification including cultivated and wild harvest area in 2018-19 (APEDA, 2019) and among all the states Madhya Pradesh has the highest area under organic certification. Indian organic market has the highest growth in the organic food sector, followed by textile, beauty and personal care. The market is projected to grow at a CAGR of over 23 per cent by 2023 (Tech Sci Research Pvt ltd report) with the help of Governmental policies along with an increase in organic cultivation area. The present Indian market is estimated at INR 40,000 million (APEDA, 2019). The demand for organic products is highest in metropolitan cities. The emerging trends in this area are: growing demand for organic food, evolving online marketing platforms, increasing creative investment and start-ups. . Also, there is increasing research and development to mount organic daily use things from traditional knowledge to avoid dumping of chemical waste into the landfill and there-by creating a healthy green India.

Growing demand for organic food is due to the increase in disposal income at urban along with the Government supports, innovative technologies & investments and these factors are the drivers for organic farming and its marketing. These drivers provide immense potential and scope for the Indian organic sector but there are many challenges faced at producers, processors and consumer level and this can be solved by the organized working of organics promoting agencies at all levels to get on a smooth track.

The regulatory framework for promoting and balancing the organic sector bodies in India are

Agricultural and Processed Food Products Export Development Authority (APEDA), National Programme on Organic Production (NPOP), Participatory Guarantee System-India (PGS-India) and Food Safety and Standards Authority of India (FSSAI). Also, Government initiatives are engaged in regulatory the promotion of organic farming, the initiatives are National Mission on Sustainable Agriculture (NMSA), Paramapragat Krishi Vikas Yojana (PKVY), Rashtriya Krishi Vikas Yojana (RKVY), Mission for Integrated Development of Horticulture (MIDH), National Mission on Oilseeds & Oil Palm (NMOOP), Network Project on Organic Farming of Indian Council of Agricultural Research (ICAR), and National Project on Management of Soil Health and Fertility (NPMSH&F).

From basic knowledge of organic sector in India, the study was confined only to Bengaluru city in Karnataka and the objectives of the study were:

1. To identify the demand for organic products among the urbanites, to study on the organization/ institutes supporting organic farming and
2. To study the perception of organic farmers on organic farming and organic certification.
3. To identify and analyze the organic farmer's perception of organic farming and organic certification, Bengaluru, Karnataka.

To achieve these objectives, primary data was collected from respondents (urbanites and farmers) and service providers of organizations/institutions according to the framed objectives. The objective of the study covers all the important sectors of organic farming i.e. consumers, organization and producers and it also brought the potential, opportunities and constraints in the organic sector of the district. Consumer sector showed a higher demand for the need of an organic product for the better health and environment, but the problem for affording the organic products was its high cost, mistrust on the products, lack & improper information on organic products and low supply. And a large number of them did not have kitchen/home garden because of inadequate home space and busy schedule in their daily routine. Tackling the problem of high cost and easy availability will solve the other concerning issues.

The organization/institute work, study showed that government, private companies, government-recognized societies, federations and NGOs have well-established their respective targets and objectives for organic industry expansion and improvements. However after examining these sectors in the report, it was found that they would have performed much better if all sectors had collaborated and combined in a coordinated way reaching all directions. Some of the NGOs and private start-ups in the district are supporting urban organic terrace & kitchen gardening and organic daily lifestyle products by providing service, training and research & development.

The final objective which was carried out from producer point at the district, it presented the perception of the organic farmer in farming & certification and found that most of the organic farmers had a sound knowledge and awareness on both i.e. organic farming and certification. Training from different agencies has helped them in better farming and also found that the cost of cultivation is low in organic farming. The other reasons for adopting are family attitude, soil fertility status, environmental protection and quality food production.

The current serious problem faced by them is the dearth of labours, as organic farming is labour intensive and also followed by the other major problems such as weed management and marketing of the produce. The other problems are irrigation, pest & diseases, uncertified inputs and low output, but the farmers tackle these problems themselves by adopting appropriate traditional methods of organic farming. Most of the farmers have formed groups/sanghas to get group organic certification as it incurs lower cost than individual certification and it also helped them in the marketing of their produce. The overall study showed that organic farming is in its nascent stage of development and has more scope and potential for development. Efficient working and implementation of all the organizational/institutional projects by integrating all the sectors shall increase the profit of the organic farmers and also afford a common man to buy organic products and this overall leads to a healthy sustainable ecosystem.

Introduction

Green Revolution in India was a transformation period, where Indian Agriculture got converted into an industrial system by the adoption of modern methods and technologies. This brought a dramatic increase in the production and productivity of all crops in India. But this was a short period of success and later showed unpleasant effects on natural resources (soil, water, biodiversity and human health). Soil erosion, salinization, etc. have led to degradation of soil and the use of HYV and intense use of agro-chemical have exploited and polluted the water resources. Many fauna and flora are extinct and in a state of endangerment. Platinum toxic, i.e. residual harmful pesticides and other chemicals, poses a significant health danger in our food and drinking water.

The long way use of Green Revolution trend in our Agriculture has started effecting the Agricultural production and productivity. The increasing population needs a greater rate of food production and in a healthy way without affecting the balance in the ecosystem. This problem has brought many challenges to farmers, scientists and extension personnel to increasing food production with sustainability. To solve these challenges, organic farming has been opted by scientists, farmers and Government. The awareness and knowledge about organic farming are much needed among both producing and non-producing population. Because based on the market requirements of organic food, supply can be made for the betterment of farmers, consumers and ecosystem as a whole.

Concept of Organic Farming

"Organic agriculture is 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, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed of using synthetic materials, to fulfil any specific function within the system"(FAO/WHO Codex Alimentarius Commission, 1999).

Organic farming has a long way of life and a tradition in our Indian farming system over centuries, it's not a new concept. Organic farming has its own system in controlling pest and diseases in raising the crop and livestock, by avoiding the use of different synthetic chemicals or gene manipulation. There are different types of organic farming are followed in a diverse climate of the country, like forest produce by default fall under this category. Organic farming among all different kind of farming system is gaining more attention due to the positive effect on the ecosystem. Also, organic farming is labour intensive, this increases rural employment and long term improvement in the quality of the resources.

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Principles of organic farming

The four principles of organic farming are as follows:

Principle of health

Health is the wholeness and integrity of living systems i.e. maintenance of physical, mental, social and ecological well-being. Organic Farming should sustain and improve the quality of the health of soils, plants, animals and humans. This principle points out that, healthy soil produces healthy crops that nurture the health of animals and people. In particular, organic farming is required to produce high quality, nutritious food that enhances health and well-being. To achieve this, organic farming should avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects.

Principle of ecology

Organic farming should be based on the ecological system and cycles, working with them in a sustained manner, i.e. organic farming should root up with ecological systems within a specific production environment. For example, crops with living soil; animals in its farm ecosystem; fish and marine organisms with the aquatic environment, etc. Organic farming has to attain ecological balance through a well-designed farming system, by the establishment of habitats and maintenance of genetic and agricultural diversity. Those who produce, process, trade, or consume organic products should protect and benefit the environment including landscapes, climate, habitats, biodiversity, air and water.

Principle of fairness

Fairness is nothing but equity, respect, justice and supervising of the common world, both among people and their relationship with other living beings. Similarly, organic farming should ensure fairness with the environment, life and all level of practices. It should also contribute food sovereignty, reduce poverty and also reduce social cost.

Principle of care

Organic farming should be done in a responsible manner and with precautionary care to protect the health and well-being of present, future generation and the environment. Organic farming should be able to prevent significant risks by adopting appropriate technologies and rejecting unpredictable ones, such as genetic engineering. Decisions taken should reflect the values and needs of all who might be affected, through transparent and participatory processes.

Present status of organic farming

Presently, India ranks 9th in terms of the world's organic agricultural land and 1st in terms of the total number of producers (IFOAM, 2019). India is the home for 30 percent of the total organic producers in the world, accounting 2.59 percent i.e. 1.5 million hectares of the total (57.8 million hectares) organic cultivation area (World of Organic Agriculture 2018 report). But also, most of our organic farmers are struggling due to poor policy measure, inadequate knowledge, increasing input cost and lack of market knowledge (ASSOCHAM report, 2018).

Organic farming is yet to taste the success; Sikkim, country's first organic state, a survey by Centre for Science and Environment, based in Delhi found that Sikkim is not complemented with an increase in the availability of organic manure and access to it. Sikkim is on its way to the real success of best state organic farming by using the requisite management practices.

IFOAM through a campaign like Honest Food and Government of India are with many schemes, programmes and project for encouraging farmers and consumers towards organic farming and organic food.

IFOAM- Organics International

International Federation of Organic Agriculture Movements (IFOAM) - Organics International, an NGO founded in 1972 and headquartered in Bonn, Germany. It is the worldwide umbrella organization for organic agriculture movement with more than 750 members 127 countries. The organization works with a mission "Leading change, organically" and the vision is "Worldwide adoption of ecologically, socially and economically sound system" on the basis of Principles of Organic Agriculture. The organization carries out different activities in order to maintain the organic farming standard along with organic accreditation and certification service. For tackling the challenges of food and farming system, the organization has focused on 3 areas and they are Supply (enabling capacity development for sustainable production), Raising Awareness (through campaigning and resource centre for organic communications) and Policy & Guarantee (promote and provide support).

-ifoam.bio

On World Food Day (October 16, 2019), IFOAM has launched a campaign called Honest Food, aiming to inspire citizens to make a better choice of their food by highlighting the benefits of organic, local, seasonal and fair food on people and the planet.

-IFOAM

What are Organic Food Products?

Organic is something which is not "artificial" or "synthetic", a natural origin or produced matter which doesn't affect any form of life in the ecosystem. And coming to organic food; they have organically grown food without the use of chemical-based fertilizer, pesticides and also not genetically modified and irradiated. To consider any food as organic whether plant or animal-based, it has to be fed and grown with organic matter along with a condition of welfare to the ecosystem. Food grown in kitchen gardens can be considered organic to some extent with the use of natural fertilizer and pesticides.

Farmers grow organic food with certified organic products, using renewable resources and with a view to conserving soils and water in order to improve environmental quality for future generations under strict government authorized practice and regulation. Also, the companies are to be certified under government, following the rules and regulations to process and market the organically cultivated food products by farmers.

Organic vs Conventional Food Products

Organically grown Food Products	Conventionally grown Food Products
• Grown with manures and compost • Weeds controlled by crop rotation, hand weeding, mulching and tillage • Pests are controlled using bird, traps and naturally derived pesticides	• Grown with synthetic and chemical fertilizers • Weeds controlled by chemical herbicides. • Pests are controlled with synthetic pesticides
Organically raised meat, dairy and egg	**Conventionally raised meat, dairy and eggs**
• Livestock are given all organic, feed are free from hormone and GMO • Disease is prevented by natural methods like clean housing, rotational grazing and healthy diet • Livestock have access to outdoors	• Livestock is given all organic feed that are free from hormones and GMO • Antibiotics and medications are given to prevent livestock disease. • Livestock may or may not have access to outdoors

People view on organic food: "We are what we eat", our health both physically and mentally is based on what we eat and live. Organic food products are the best to eat for a healthy lifestyle and the common philosophy among us these days are "Can't hurt, might help" which is increasing the demand for the consumption of organic food products. And also there are people still in confusion whether organic food is healthy or not compared to conventional food produces.

There are several factors affecting the decision for purchase and consumption of organic food products like lack of awareness, quality and quantity availability as per requirement, the etiquette of buying food and low nutritional knowledge. Consumer's income also plays an important role, usually higher-income family prefer to go with organic food products and also age factor i.e. lower age group prefer and willing to pay more for organic food (Sushil Kumar and Ali J, 2011).

Benefits of Organic Food

With the increase in awareness among the consumers about food safety and environmental issues there is an increasing concern about their health and environment health. Organic food has become a major alternative for consumers to overcome the negative consequences of conventional farming methods. And many farmers also see organic farming as a way to increase and stabilize the production & earn with the public support and market demand. The benefits of organic farming are:

Health

Organic food is grown and processed in a regulated way meeting the safety standards and regulations of organic farming. There are various studies showing that organic food contains a very low concentration of chemical and proved to have a low health risk.

Toxin and GMO-Free

Organic food products guarantee non-toxic chemicals and GMOs in their production. Also, no antibiotics and no hormone are given to the livestock. Organic producers and processor undergo strict announced certification inspection by the third-party inspectors to ensure proper required quality standard.

High nutrient content

Compared to conventional food, organic fruits, vegetables, grains and edibles have low residues of pesticides, making them safer to eat and ensuring the number of nutrients found in them.

Environment

The main focus of organic farming is agro-ecology practices. It can reduce the water, air and soil pollution and promotes the conservation of biodiversity, enhances the functioning and services of ecology and also develops self-reliance system. A natural method like mulching, crop rotation, crop residue management and other improved organic practices reduces green gases, which helps in mitigating climate change.

Economics

Certified organic food products fetch a higher price in the market over conventional food products and directly procured by the companies; this benefits the farmers with the organized supply-chain system

Organic market in India

In the year 2016, the global organic food market stood at $110.25 billion. It was projected to have growth at a Compound Annual Growth Rate (CAGR) of 16.15 per cent in value terms, during 2017 – 2022 to reach $ 262.85 billion by 2022. The Indian organic Market is distributed across food and drink sectors, health and wellness, cosmetics and personal care, and textile industries. The highest growth is observed in the organic food segment, followed by textile, beauty and personal care. Indian organic food market is projected to grow at a CAGR of over 23% by 2023, on an account of favourable government policies supporting organic farming coupled with a rising land area under organic cultivation (Tech Sci Research Pvt ltd report). The current domestic market in India is estimated at INR40,000 million which is likely to increase by INR1,00,000 million - INR1,20,000 million by 2020 (APEDA, 2019).

Export of Indian organic products has increased by 17% between 2015-16 and 2016-17. Indian organic food exports were estimated at US$299 million during 2015-16 with a total volume of 263,688 MT. The major export destinations were the US, European Union, Canada and New Zealand. Oilseeds comprised half of India's overall organic food export, followed by processed food products at 25% (APEDA, 2019). In India, the majority of the demand comes from tier 1 cities. Private Companies are witnessing notable increased growth and demand from metro cities with the entry of several new players in the organic food market such as Conscious Foods, Sresta, Eco Farms, Organic India, Navdanya Morarka Organic Foods to name a few.

Navdhaya

(Means "nine crop" symbolizing protection of biological and cultural diversity)

This is an NGO in India, promoting biodiversity conservation, organic farming, farmers' right and seed saving process. This NGO began in 1984, as a Program Research Foundation for Science, Technology and Ecology, a participatory research initiated by the environmentalist Vandhana Shiva. It has formed a network of seed keepers and organic producers spread across 22 states in India. It has helped in setting up 122 community seed banks across India, trained over 9,00,000 farmers on food sovereignty and sustainable agriculture since 20 years and also helped in setting up the largest direct organic marketing and organic fair trade network in the country. The NGO has a learning centre called Bija Vidyapeeth at Doon Valley, Uttarakhand, India.

-navdhaya.org

Packaged organic food and beverages is an emerging niche market in India and its primary consumers are high-income urbanites. The total market size for organic packaged food in India in 2016 was INR 533 million, growing at a rate of 17% over 2015, and is expected to reach INR 871 million by 2021. Sresta Natural Bio-products Pvt Ltd. an Indian based company is emerging as the market leader, with 37% value share of the packaged organic food market and 7.8% share of the packaged organic beverage market (E&Y report).

Organic Food Production in India

Among 178 countries, India stands in a ninth position actively practising organic agriculture. India produces a large variety of organic products with the existing various agro-climatic zones. The organic production area in India comes under two management systems i.e. National Programme on Organic Production (NPOP) and Participatory Guarantee System-India (PGS-India).

The total area under organic certification is 3.566 million ha in 2018-19, including both cultivated area and wild harvest area. Among the states, Madhya Pradesh has the largest area under organic certification (9.18 lakh ha) followed by Rajasthan (6.32 lakh ha), Maharashtra (2.61 lakh ha), Odisha (1.28 lakh ha), Karnataka (1.05 lakh ha), Gujarat (0.94 lakh ha), Telangana (.88 lakh ha), and Sikkim (0.76 lakh ha). These states had a combined share of 90 percent of the total area under organic certification in 2018-19 (apeda.gov.in).

The total production including cultivated and wild harvest is 2645315.67 tons (Farm Production 2607385.00 tons + Wild Harvest Production 37930.67 tons) in 2018-19. The total exports quantity is 614089.61 Tons of total value (INR) 5150.99 crore in 2018-19. Presently India is home for 2371 individual farm producers, 3488 ICS groups (11.47 lakh farms), 1452 total processors, 777 total trader, 90 WH operators (total collectors 29384), 8301 total operators and 11,49,371 total farmers (apeda.gov.in).

Organic production by crop in the cultivated area during 2018-19 including both organic and in-conversion: Sugar crop 991640.09 tons, Oil Seeds 727156.19 tons, Fibre Crops 313833.43 tons, Cereals & Millets 269734.14 tons, Pulses 71875.27 tons, Plantation Crops (tea/coffee/coconut) 61544.01 tons, Spices and Condiments 56253.05 tons, Medicinal/Herbal/Aromatic Plants 48424.78 tons, Fruits 35814.95 tons, Flowers 11015.82, Dry fruits 8864.228 tons, Vegetables 7135.395 tons, Miscellaneous 1964.47 tons, Fodder seeds/Crops 1851.19 tons and Tuber crop 289.07 tons. This is making total certified production of 2607396.089 during 2018-19 (apeda.gov.in).

Emerging key trends in Organic food industry are:

- Increasing demand for organic food: The growth and demand for the need for organic food from people, as well to match the demand of people there is a steady growth of organic food market. In 2016, the size of the organic food market was $110.25 million and estimated to have 23 per cent CAGR.

- Increasing use of online marketing channels: Online marketing is one of the best routes to expand the market and many organic companies are adopting this route to meet the consumer's need. Sahaja Aharam organic stores are located in Hyderabad city, but it reaches people outside the city through their own online website. Premium food retail chains such as Godrej Nature's Basket also sells their band on online, other companies are Navdanya and 24 Mantra online (E&Y research report).

- Increasing number of organic food restaurants and cafes: Diabetes, anxiety, stress and other health problem incidence are increasing in urban India. These problems were taken-up by many entrepreneurs to start up their ventures like the organic cafe and organic markets for the people. For example, Devang House at Delhi is a fully organic cafe; they organize Organic Living Festival every fortnight and also sell herbal lifestyle products.

- Increasing awareness regarding organic foods: To spread the awareness about benefits and need for organic farming to farmers and consumption of these products many events are taking place throughout the country. For example, Certificate Course on Organic Farming: MANAGE, Hyderabad in collaboration with National Centre of Organic Farming, Ghaziabad organized a one-month Certificate Course on Framing at MANAGE, Hyderabad during 07th March – 05th April 2019 for graduates preferably rural youth for skill development and creating job opportunities in the organic sector. Another example is an organic food festival Praktrut-2016, where organic farmers across the country participated and exhibited organic produce and traditional food recipes and the main idea were to connect the farmers and consumers in the Rajkot city.

- Increasing investment in organic food companies: With an effective growth in the Indian organic market, many investors are investing in organic food companies. Online food retailer such as Natural Mantra, Nature Land Organics and Organic Shop has attracted plenty of investors.

- Increasing retail shelf space for organic products: With the increase in the demand for the organic food there is an increase in the size of the retail shop.

- Introduction of new product categories and varieties: Organic food companies are coming up with new varieties and categories of food to attract, as well to provide a large variety of choices for the consumption/consumers. For examples: new product like ready-to-eat snacks, cookies, and juices have attracted a large number of consumers.

Growth drivers of organic food cultivation and markets in India:

- Increasing awareness of health: Increase in the health concern among the people now-a-days, shows an increase in the importance given to the quality of food and nutrient content. This is resulting in increased consumption of organic food.

- Increase in disposable income: The fast-growing Indian economy has led to an increase in

the income of people. With the increase in income of the people, there is an increase in the expenditure made by them in organic food products for a healthy lifestyle.

- Urbanization and an increase in the working class: Increase in urban and working population leads to growth in the per capita purchasing power with the changing lifestyle and food habits. The demand for organic food is generated from this population and now for the concern of health, they are ready to pay a high price for organic food.

- Increasing support from Government of India: Government of India is promoting organic farming and consumption of organic food for the better future in India. Financial support to farmers adopting organic farming is given by central schemes like National Mission for Sustainable Agriculture, Mission for Integrated Development of Horticulture, National Food Security Mission and Rashtriya Krishi Vikas Yojana.

- Technological developments: Organic food industries has developed innovative technologies solution using artificial intelligence, imaging and renewable energy. One of the developments is the establishment of cold storage in remote areas to improve shelf life and value chain, with IT interventions developing a solution to the problems facing the organic food industry. For example, Ecozen Solutions has developed solar-powered cold storage for fresh farm produce.

Challenges faced by organic sector in India

Organic Food Industry has been blossoming in India, it has to be recognized as a separate industry. Both the Government and private players need to develop a strong policy to benefit producers, processor and consumers as a whole. There is an immense potential and scope for organic farming to grow in India if fed with steady investment and benefits on both existing and new initiatives. The challenges faced can be grouped into three categories:

1. Challenges faced at producer level

- Certification process
- Certification standards
- Lack of market for pre-certification produce
- Lack of standardization for the certification of different commodities
- High dependency on agriculture
- Lack of incentives for farmers
- Lack of standardized organic agriculture inputs and subsidy on organic inputs
- Lack of organic cultivation research and extension

2. Challenges faced at Processor level

- Supply chain issues

- Lack of a proper organic supply chain is felt more acutely in hilly, tribal and remote areas that have a high potential for organic farming but have difficult terrain or underdeveloped infrastructure
- Global competitiveness
- Lack of proper branding and packaging

3. Challenges faced at Consumer level

- Lack of awareness among consumers
- The high cost of organic food products
- Limited availability of organic food products
- Busy work schedule

Regulatory environment and government initiatives

Government of India and other agencies has taken several initiatives to solve the challenges faced and increase the competitiveness in the Indian organic sectors to match the global standards of Organic Products.

Regulatory framework

To match with the international standards, the bodies formed in India have taken steps to identify organic products. Agricultural and Processed Food Products Export Development Authority (APEDA) for implementing the National Programme on Organic Production (NPOP)

APEDA

It was established under the Agricultural and Processed Food Products Export Development Authority Act, December 1985. APEDA is the apex organization under the Ministry of Commerce and Industry, Government of India. The responsibility is to promote and develop the export of agro products from India.

The main functions include promoting the export-oriented production and development of scheduled products (including fruits, vegetables, cereals and rice), fixing of standards and specifications for the scheduled products for the purpose of exports.

NPOP

Through third-party certification under NPOP, Government of India is promoting organic farming since 2001. To meet the strict standard for the exports, APEDA implemented NPOP. NPOP provides information on standards for organic production, systems criteria and procedures for accreditation of Inspection and Certification Bodies. It also forms the guidelines for the national organic logo and

regulations governing its use. The standards and procedures are formulated in relation to international standards such as those of Codex and the International Federation of Organic Agriculture Movements (IFOAM).

The NPOP standards for production and accreditation system are also recognized by the European Commission and Switzerland as equivalent to their country standards. It is informed from time to time by the Department of Commerce to create and certify organic goods, define national standards of bio-products and processes, accredit certification programs run by certification agencies, and certify organically based products. The NPOP is subject to policy creation.

Guiding principles of certification standards under NPOP are:

1. Conversing the land for organic farming
2. Use of Natural Farm Inputs
3. There should not be use of Genetically Modified inputs or Irradiation technology
4. Integrity of physical, biological, and mechanical processes must be maintained at all times
5. Following sustainable practices during farming
6. There should not be any contamination from nearby farms

The process of organic certification in India

All types of agricultural products, including processed food and restaurants served food can obtain organic certification. A group of large-farm farmers or small-farm farmers living in the same geographical area can apply for organic certification for their farm produce (group size from 25-500 farmers). An important note, certification is provided to agricultural produce, not to the land.

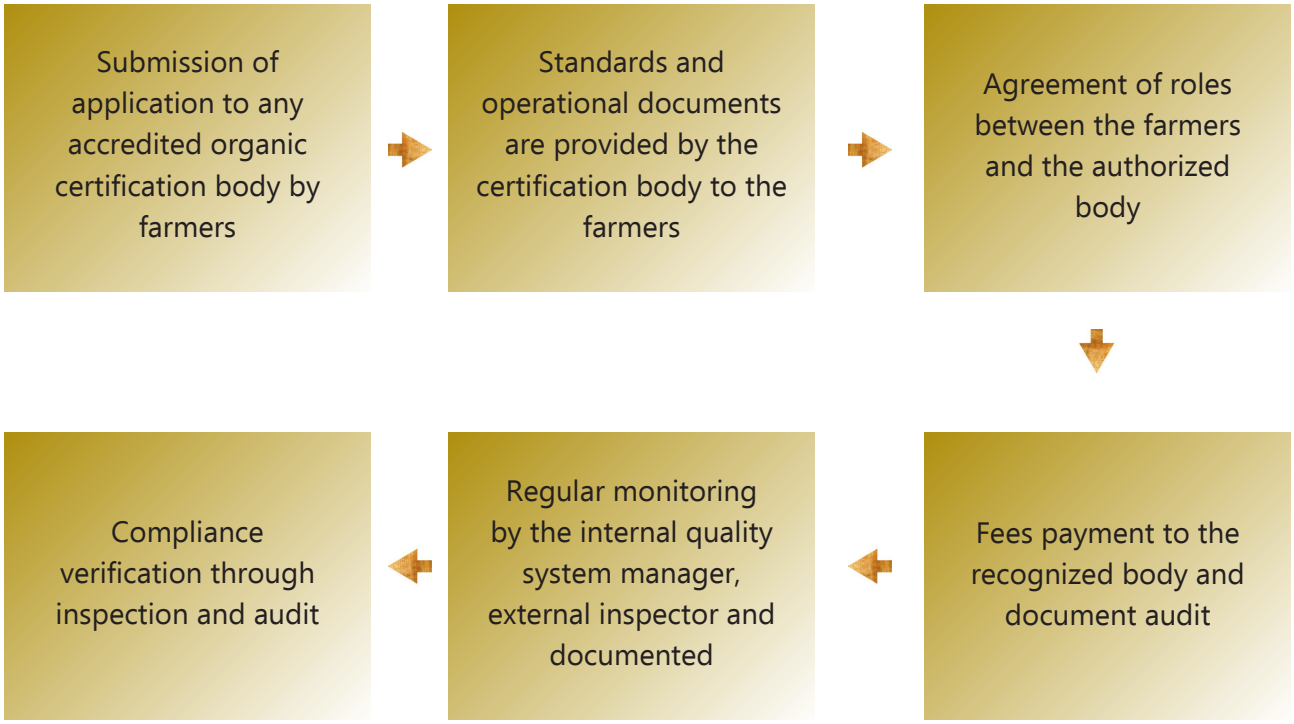
An internet-based e-service provided by APEDA, called Tracenet to collect, record and report data on organic certification. Tracenet is also used to trace the supply chain of the certified produce from the farm level.

Certification agency

Under NPOP, organic certification process is carried out by accredited bodies. There are 28 agencies accredited by APEDA. The main responsibility of these certifying agencies is to verify farms, storages and processing units. Products certified organic have the right to carry the India organic logo.

The process of certification

(apeda.gov.in)

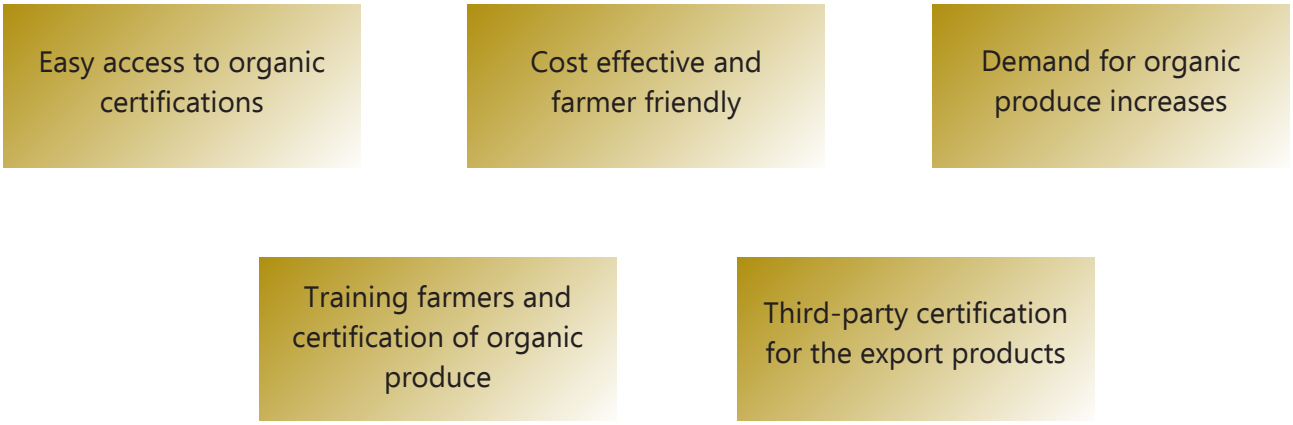


Participatory Guarantee System-India (PGS-India)

PGS-India (Participatory Guarantee System of India) is a quality assurance initiative that is locally relevant, emphasize the participation of stakeholders, including producers and consumers and operate outside the frame of third party certification. PGS-India was developed during 2006, officially recognized in 2015. This certification process for the farmers has been made free, ensuring that they bear the only nominal cost which is set by the farmer community.

PGS-India is implemented by the National Centre of Organic Farming (NCOF) under the National Project on Organic Farming (NPOF), Department of Agriculture, Cooperation and Farmers' Welfare, Government of India. Produce that has been converted to organic from the farms carries the PGS-India Green logo during the transition period and after three years duration of not using any chemicals, the farm will be eligible for the PGS-India Organic symbol.

Here the local farmers conduct their own appraisal, maintain the rules and standards of the group and it is simpler, cheap and controlled by the farming community itself. PGS is generally recommended for a group of farmers who come and work together in a group at village or district level. The design of the PGS is ideally suited to small and marginal farmers, where NGOs or any organization support the group. The scope of PGS-India includes the following:



Source: pgsindia-ncof.gov.in

In PGS-India, Farmer Grower Group Certification (GGC) controls the quality system in the certifying agency. The role of the GGC is to function as an internal quality control system for small farmers and cooperatives, to coordinate producers producing common goods in a single management and marketing system, to collectively market organic products and the central processing and distribution system, and to ensure compliance with organic certificates, the GGC acts as an internal control and supervision system

Food Safety and Standards Authority of India (FSSAI)

FSSAI operationalize the Food Safety and Standards (Organic Food) Regulation, 2017. The regulation recognizes both NPOP and PGS-India as certified organic products, along with that packaged food has to meet both the conventional food standards and organic food standards. The key features of this regulation are as follows:

- A person can manufacture, pack, sell, offer for sale, market, distribute or import any organic food products only when he complies with the regulations.
- Organic foods should comply with provisions from at least NPOP or PGS- India or other system or standards notified by the Food Authority.
- Small original producer or producer organization, marketing their organic produce through the direct sale are exempted from the provisions.
- There should be accurate organic labelling with standard labelling requirements.
- Till producer level, traceability should be established.
- All organic foods should have the Food Safety and Standards (Food Product Standards and Food Additives) Regulation 2011, and the Food Safety and Standards (Contaminants, Toxins, and Residues), Regulations, 2011.
- Organic food seller needs to sell organic food items in a distinguishable manner from conventional food items.

- Imports of organic food under bilateral or multilateral agreements are based on the equivalence of standards between NPOP and the organic standards of the exporting countries so that there is no need to re-certify on import.
- A Transaction Certification (TC) has to be issued for organic food consignments by an accredited certification body under the terms and agreements.

Government initiatives

National Programme for Organic Production and National Project on Organic Farming are the two growth engine at national level Government of India Programmes for promoting Organic farming. NPOF provides 25 per cent to 35 per cent financial assistance of the total cost to the organic farmer of the project. However, a cap of INR 4 million to INR 6 million has been set for the establishment of production units (bio-inputs), such as bio-fertilizers and bio-pesticides.

Apart from these two programmes, many other schemes/programmes have been taken up to improve organic farming. Major schemes promoting organic farming are National Mission on Sustainable Agriculture (NMSA), Paramapragat Krishi Vikas Yojana (PKVY), Rashtriya Krishi Vikas Yojana (RKVY), and Mission for Integrated Development of Horticulture (MIDH), National Mission on Oilseeds & Oil Palm (NMOOP), NetworProject on Organic Farming of Indian Council of Agricultural Research (ICAR), and National Project on Management of Soil Health and Fertility (NPMSH&F).

There is a special focus on North East region, major programmes are: Horticulture Mission for North East and Himalayan States (HMNEH) and regions (MOVCDNER) under National Mission for Sustainable Agriculture (NMSA)

(apeda.gov.in).

Schemes	Details
NPOF	• Financial assistance outlay of 20-30 per cent • For the establishment of bio-fertilizer units, INR 40-60 lakh assistance given by NABARD • Integrated use of chemical, organic manure and bio-fertilizers
National Horticulture Mission (NHM) and Horticulture Mission for North East and Himalayan State	• For establishment of vermin-composting unit 50 per cent subsidy is given • INR 30,000 per beneficiary is given for adopting organic farming • INR 5 lakh for farmer group covering an area of 50 ha

NMSA	• 100 per cent assistance by the state government for setting up mechanization of fruit/vegetable waste • 100 per cent assistance for setting up of bio-fertilizer and bio-pesticide manufacturing units • INR 85 lakh assistance for setting up a bio-fertilizer testing quality control laboratory
PKVY	• INR 20,000 given to farmers up to 3 years for performing organic cultivation • Procuring, packaging material, preparation of labels, holograms, printing and branding of organic produce given at INR 2,500/acre • Financial assistance of INR 120,000 for one cluster of 50 acres is provided for transportation of organic produce to the market place • In order to encourage and fund marketing facilities, financial assistance of INR 36330 per cluster for organizing an organic fair to cover the expenses of organizing stalls, rental and labour charges, promotional material and event management is given.
RKVY	• To promote organic farming in different components, with approval from state-level approval committee
NFSM	• NFSM and Accelerated Pulses Production Programme (A3P) encouraging farmers to use rhizobium culture and phosphate solubilizing bacteria

The study aims to provide an analytical description on "what is going on, how it is benefited, who is doing what and what are the opportunities and constraints" in the field of "organic farming". The three-point/sides are organic farmers, organic consumers and the environment. The correct continuous flow into the triangle, with the help of both the government and others, contributes to a balanced and sustainable ecosystem. In addition, farmers and customers should be conscious of and have knowledge of sustainable or organic farming at all stages.

When a consumer can afford organic products in his daily needs will make the organic producer cultivate more, but this is not the regular case everywhere as everyone couldn't afford it due their low income and high cost of the products. This creates some constraints and improper adoption of organization/institutional support at the gross level. The study makes an attempt to identify the critical gaps and challenges for the betterment of organic farming which will sustain consumers and producers with the help of organic practices and support from national & central Government, the government recognized societies, private, and NGO bodies.

Keeping trusting all the discussions and facts in the view, the study was conducted at Bengaluru city, Karnataka. The study analysis on existing works of all the bodies that are working for the betterment of organic farming and its areas. The involvement of extension roles and their different methods are necessary for the perfect implementation of organics in both rural and urban, including production, processing and consumption.

The study can help in the formation of new policies and supports based on the existing system and technologies. There is a need to analyze the benefit & constraint faced by organic producers and consumers along with educating them with the importance of organic need and providing the information on organic farming support, policies and programmes. To understand the problem and other factors in organic farming, a research problem entitled "Organic Framing:

Path for Sustainable Ecosystem" is proposed and conducted at Bengaluru, Karnataka with the following objectives:

1. To Identify the Demand for Organic Food among the Urban Population of Bengaluru, Karnataka
2. To identify and study the major institutions and organizations supporting organic farming, Bengaluru, Karnataka
3. To identify and analyse the organic farmer's perception of organic farming and organic certification, Bengaluru, Karnataka.

Research Methodology

A well planned and crafted methodology helps the researcher to proceed in the right direction during the process of the study. After reviewing the required available pieces of literature, an appropriate research method and required tool have been selected to conduct the study. This section describes the method and tool followed during the process of study.

Locale of the study

The study was conducted in Bengaluru city of Karnataka state, one of the busiest metropolitan city is selected because it has a large number of working population with fast growing economy. Determining the demand for organic food would help in estimating the required supply of organic food and thereby which would help in increasing the organic products as per need. This demand identification can help to know the urbanites aware of organics. As well as it will increase organic farms and stores and start-ups also this can increase employment in organically related sectors.

This study estimates the demand for the kind of organic product required by the urbanites. The organization and organisation's research showed all the steps taken with existing initiatives, plans and programs, for the well-being of organic farmers and consumers, as well as whether it was reaching farmers.

To analyze the perception of organic farmers on organic farming and certification 2 taluks are analysed as this will bring out the benefits and constraints. The selected taluks were Nelamangala and Yelahanka in Bengaluru, Nelamangala taluk was selected because it was near to most of the Government and other organic farming supporting bodies, whereas Yelahanka was far to those supporting bodies but only near to local market. And, this would bring unbiased results on organic farming and certification perception in the study.

Selection of the Respondent

According to the study, the required respondents are:

Objective 1

To Identify the demand for organic food among the Urban Population of Bengaluru, Karnataka- Urbanites (employed, self-employed, housewife, retired and students) of 250 sample size were selected by simple random sampling. A structured questionnaire was prepared to estimate their demand and knowledge of organic food..

Objective 2

To identify and study the major institutions and organizations supporting organic farming, Bengaluru, Karnataka- 12 major institutes and organizations were randomly selected to study how they are working for the betterment of organic farming. Here the Organization/institutes selected were Government, NGOs, Societies and Private, an unstructured questionnaire was prepared for the study.

Objective 3

To identify and analyze the organic farmers' perception towards organic farming and organic certification, Bengaluru, Karnataka- 60 farmers practicing organic farming were selected by simple random and snowball sampling technique with a structure questionnaire.

Research design

This study consists of simple tabular calculation for the estimation objective 1 & 2 and of descriptive research for describing objective 3 under the study.

Data collection

Primary data collection was done by face to face interview and observation method with the respondents and service providers according to the objectives.

Results and discussions

Results of the study have been discussed in this section which arose after the analysis and interpretation of data. For a better understanding of the results, these have been presented under different sections. Each section gives detailed information on the study results and also an analytical view of these results by discussing their various dimensions. Keeping in view the objectives of the study, results and discussion have been presented dispensed under the following heads:

Section 1: To Identify the Demand for Organic Food among the Urban Population of Bengaluru, Karnataka

This section has identified and analysed the demand for organic food among the urban population of Bengaluru, Karnataka. The sample size of 250 has been selected, collected primary data and analysed by basic tabular calculations in the study. The simple random sampling technique was used to select the samples from the different regions of Bengaluru. The urbanites selected for the study were employed, self-employed, house-wife, retired and students. The discussion in this section offers a necessary analysis of urban demand and their awareness of organic food, which will help to build balance and demand potential for organic food suppliers in this region. The different topics that determines the demand for organic food among urban population has been discussed below:

Table 1.1: Study sample description

Variables		No. of Respondents	Percentage
Age	21-30	102	40.80
	31-40	71	28.40
	41-50	45	18.00
	51 and above	32	12.80
Gender	Male	113	45.30
	Female	137	54.70
Educational Status	Higher Secondary	3	01.10
	Diploma	8	03.20
	Graduation	155	62.10
	Post-Graduation & above	79	31.60
	Others	3	01.10
Urbanites Samples	Employed	128	51.20
	Self-employed	33	13.20
	House-wife	26	10.40
	Retired	19	07.60
	Student	44	17.60

Family Income Source	Farming	19	07.60
	Government Jobs	56	22.40
	Business	34	13.60
	Private Jobs	98	39.20
	Labour	11	04.40
	Others	32	12.80
Household Income	<10,000	37	14.70
	10,000-20,000	55	22.10
	20,000-30,000	50	20.00
	>30,000	103	43.20
Family Size	1-3	50	20.00
	3-5	144	57.60
	5-7	43	17.20
	>7	13	05.20
Marital Status	Married	187	74.80
	Single	63	25.20

Table 1.1 shows the basic socio-economic description of the study sample. The various range of age group has been covered, i.e., above the age of 21 and more respondents fall in the age group range of 21-30 (40.80 per cent). Majority of the respondents were women (54.70 percent) and male contribution in the survey was 45.30 percent, indicating not much gender bias in the study. Among the respondents, 62.10 per cent were graduates and 74.80 percent of respondents were married, respectively. Around, 51.20 per cent of the urbanites sample was employed and out of the study sample, 39.20 percent was employed under private sector for the source of income. Further, the average family size was 3-5 in number (57.60) and 43.20 percent have monthly income more than

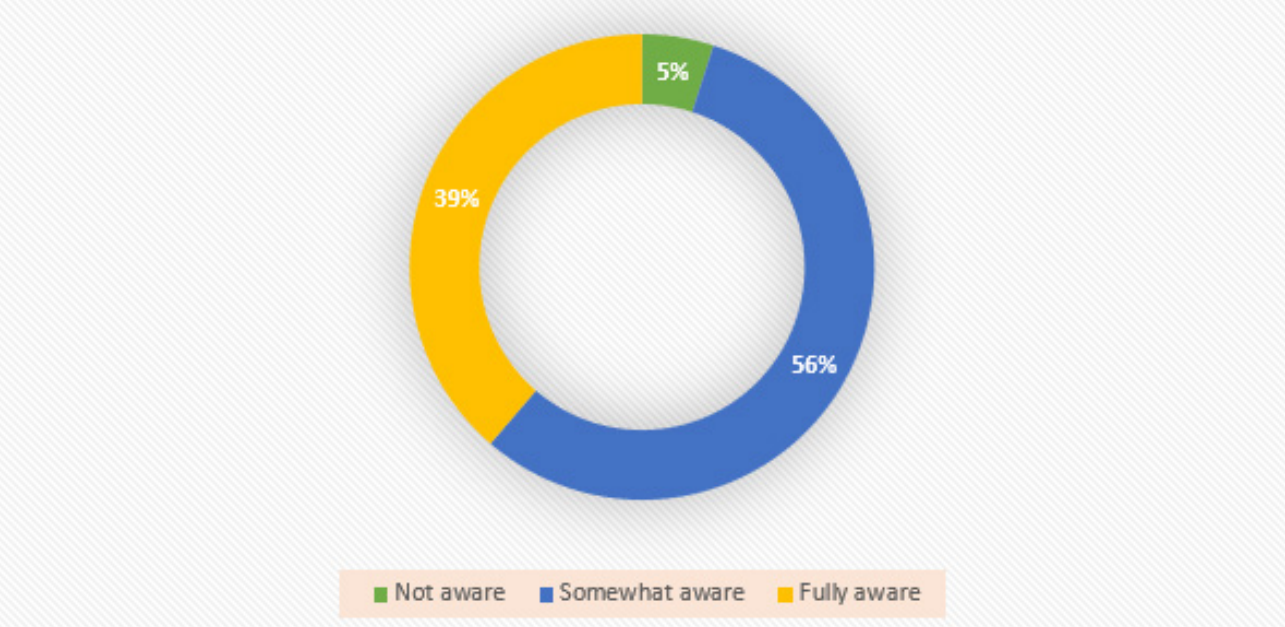


Fig 1.1: Awareness/ knowledge of urbanites on the existing organic products

30,000/-.

From the figure 1.1, it is clear that 95 per cent of the respondents were familiar with the term organic products. However, this indicates that the respondents have better knowledge related to the daily food they consume was under the category of organic or conventional products. About 56 per cent of the respondents were fully aware of the existing organic food. Only 5 per cent of the respondent has a lack of knowledge on existing organic products and 39 percent has a little awareness.

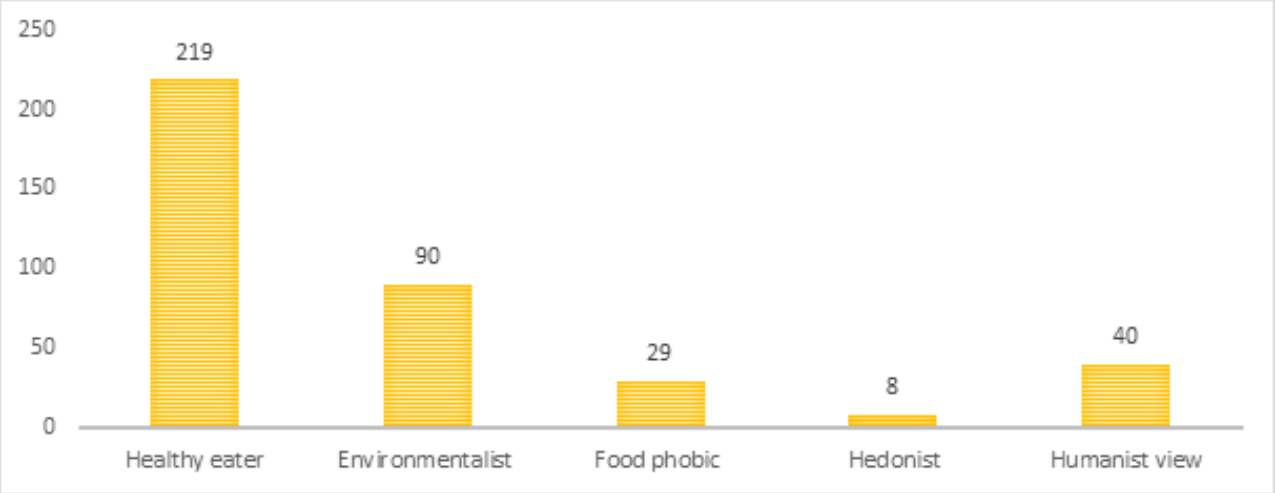


Fig 1.2: Reasons for the consumption/buying of organic products

Table 1.2: Reasons for the consumption/buying of organic products

Reason	Percentage (%)
Healthy eater	87.40
Environmentalist	35.80
Food phobic	11.60
Hedonist	03.20
Humanist view	15.80

From the figure 1.2 and table 1.2, it is clearly seen that most respondents had a positive attitude towards organic food. Over 87 percent of them eat organic products for the concern of a healthy life. Further, about 14 percent consumed organic products, as they were food phobic and hedonist.

And respondent around 50 percent consumed from the point of environmentalist and humanist view. This summarizes the intent of the respondents' consumed/processed organic food in relation

to conventional goods on their improved health and on ensuring environmental quality.

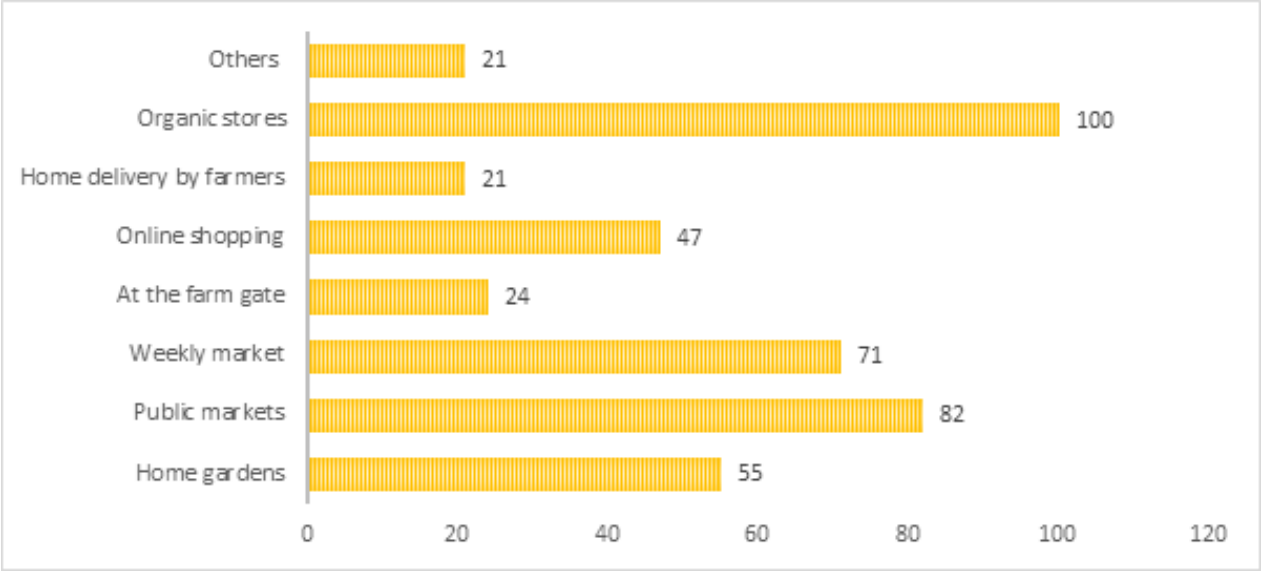


Fig 1.3: Place where the respondents purchase the organic products

Table 1.3: Place where the respondents purchase the organic products

Places	Percentage (%)
Home gardens	22.10
Public markets	32.60
Weekly market	28.40
At the farm gate	09.50
Online shopping	18.90
Home delivery by farmers	08.40
Organic stores	40.00
Others	08.40

Table 1.3 and figure 1.3, show the place of availability and market place of organic products. The respondents buy the organic product products from different places, which means that the organic products are not available at one place and there is a need in expansion and integration of the market for the consumers' convenience.

Respondents observe home gardens, public and a weekly market (more than 80 percent) is the main source of the market of buying the organic products following by organic store (40 percent). Another core channel for the purchase of an organic product is online shops accounting about 18 percent. Besides, the organic product mainly vegetables and fruits are also sold at farm gate (9.50 percent) and through home delivery by farmers (8.40 percent).

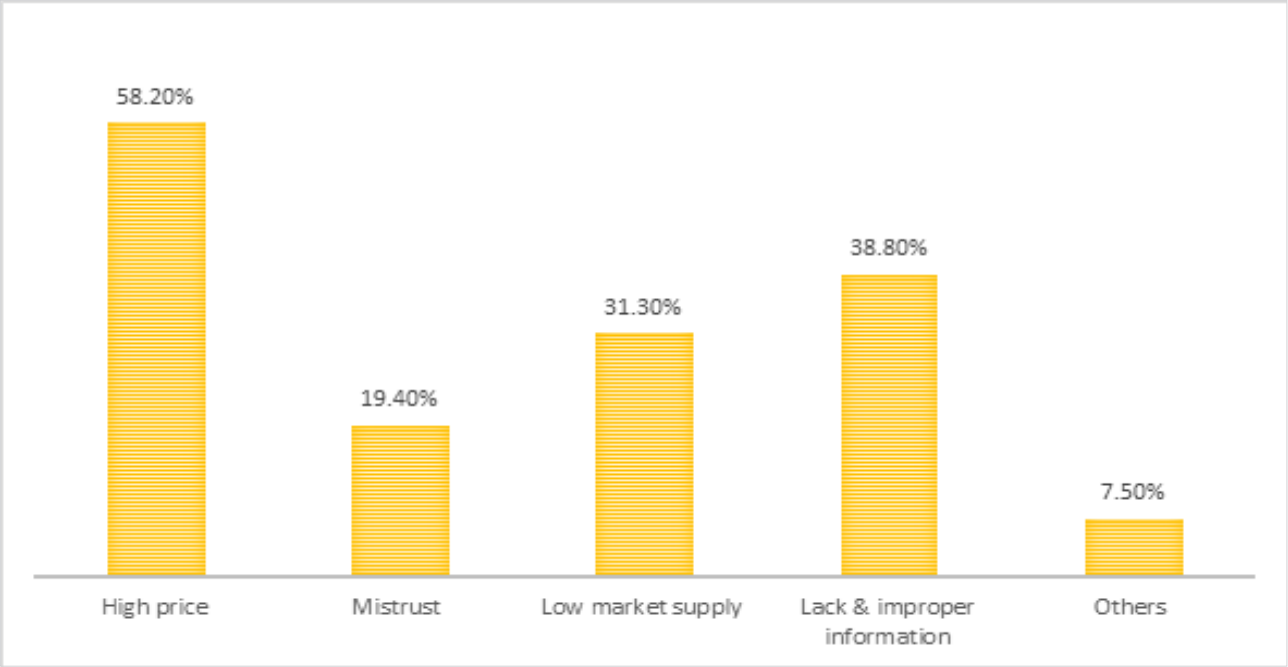


Fig 1.4: The reason for not completely dependent on organic food

The key reasons for not completely depending on the organic products or the lack of willingness to buy them have been depicted in figure 1.4. This clearly shows the high price (58.2 percent) caused the lack of respondents to completely depend on organic products as most of the respondents fall under the middle-income group in the district.

The other major reasons for not being completely dependent were lack & improper information (38.8 percent) on the availability of organic products and its improper place of market, low market supply (31.3 percent) in the nearby general grocery stores, mistrust (19.40 percent) in the quality of the organic product or selling of fake products under the organic brand and other factors like time for searching the better quality (7.50 percent).

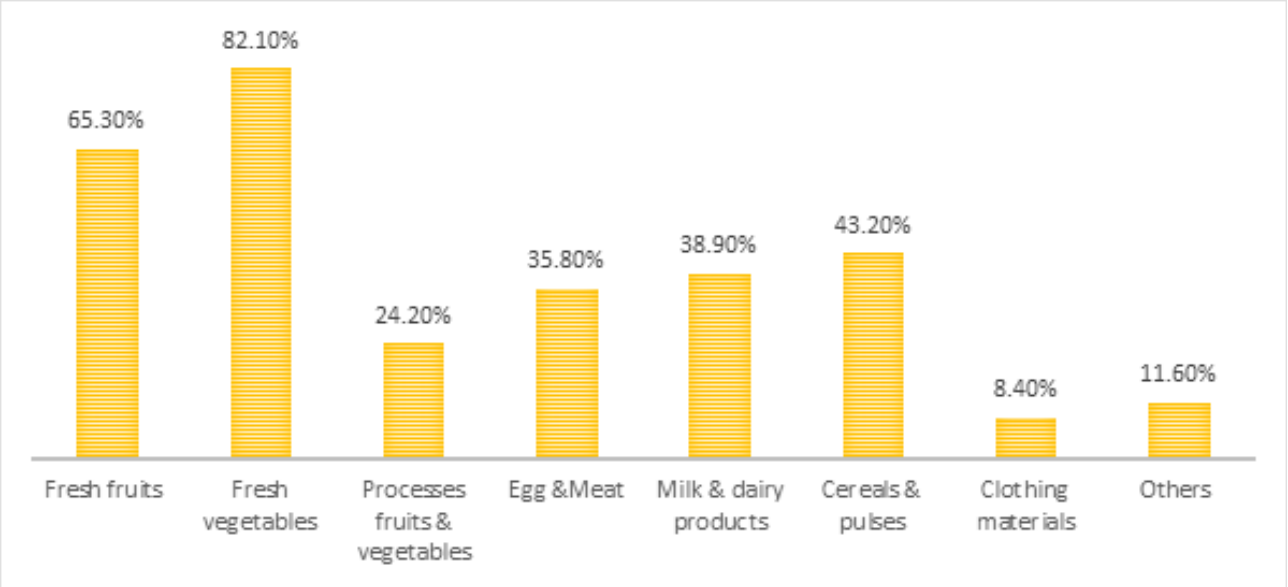


Fig 1.5: Demand for the different organic products

The indication of the demand for different categories of organic products has been depicted in figure 1.5. The respondents from the study prefer to have different varieties of organic fruits & vegetables on an average of more than 70 percent. They also revealed that they also need different processed fruits & vegetables (24.2 per cent).

Among the respondents, a significant number of them expected to have organic animals' products (on average of 36 per cent). Also, the respondents expect (more than 40 per cent) cereals, millets and pulses need. Few respondents accept the supply clothing materials and other (19 per cent). This summarises that organic products seller are required to supply those products to regular consumers for better organic product availability and marketing sites.

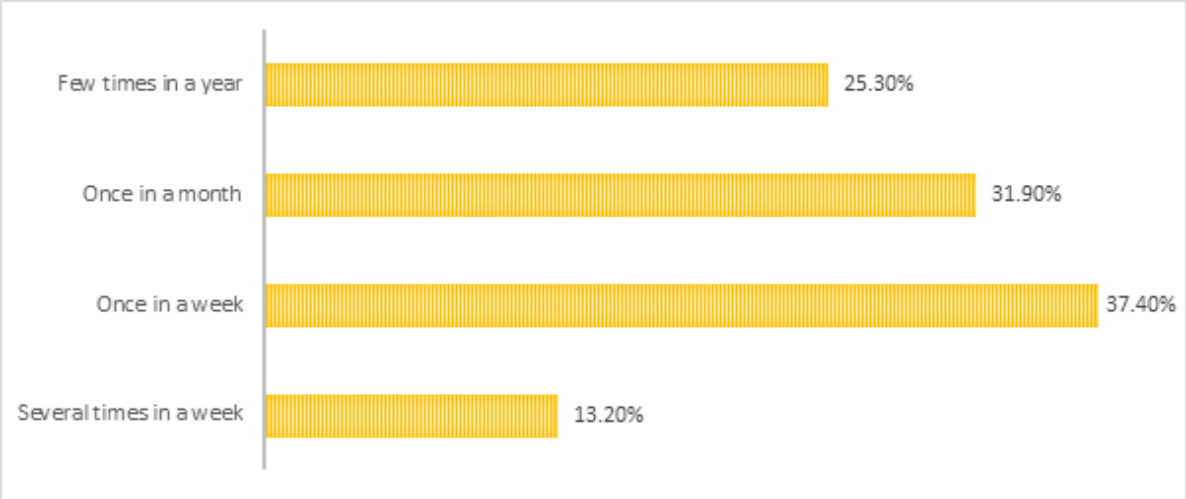


Fig 1.6: How often the organic products are purchased by the respondents

The figure 1.6 provides the data on how often the organic products are purchased by regular organic consumers. 37.4 p cent regular consumers buy the organic perishable regularly once in a week and whether as milk and its products are bought several times a week (13.2 percent) as they are highly perishable than vegetables and fruits.

Once in a month (31.9 percent) get organic cereals & pulses and other groceries and 25.3 percent of them buy major regular use cereals and floor are bought a few times in the year. Therefore, this data can provide a rough figure of the essential quantity and time for the need organic products and this can balance the supply throughout the year.

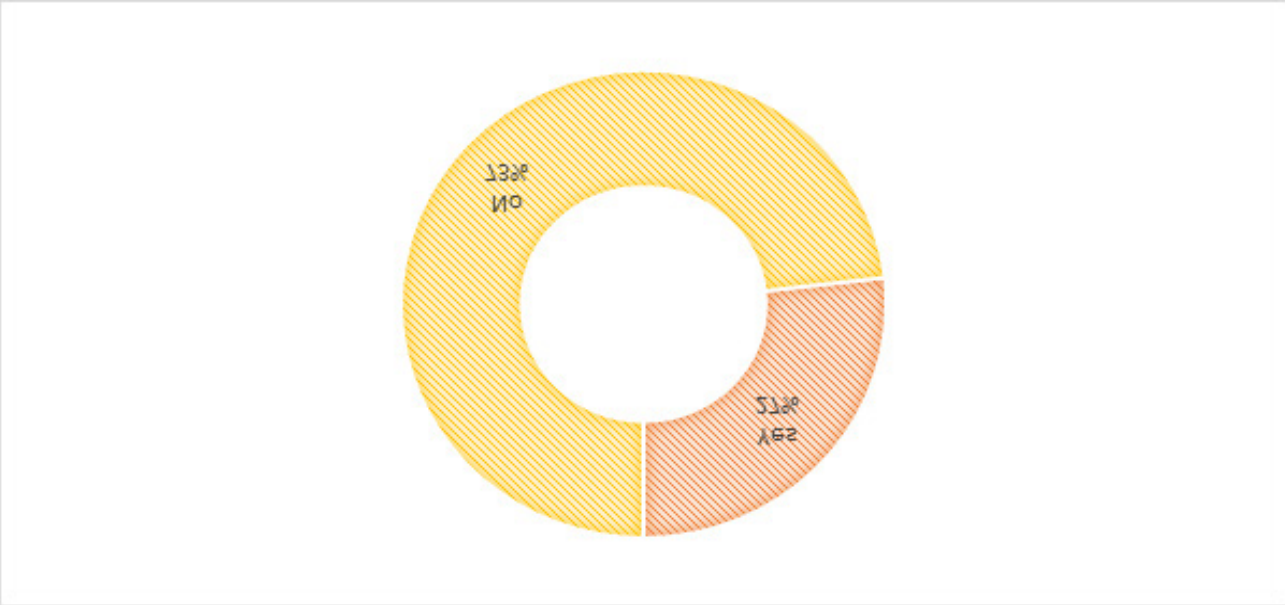


Fig 1.7: Presence/maintenance of organic/kitchen garden with the respondent

Figure 1.7 represents the percentage of the respondents having presence/ maintenance of organic/ kitchen garden at their residence. It clear that a very few respondents (27 per cent) have organic/ kitchen garden and 73 per cent does not have an organic/kitchen garden at their residence. The main reason for not having of organic/kitchen garden is due to inadequate space, rented house and less time for maintenance. New approaches for growing organic/kitchen garden should be introduced to resolve the problem of limited land, rental houses or less maintenance time.

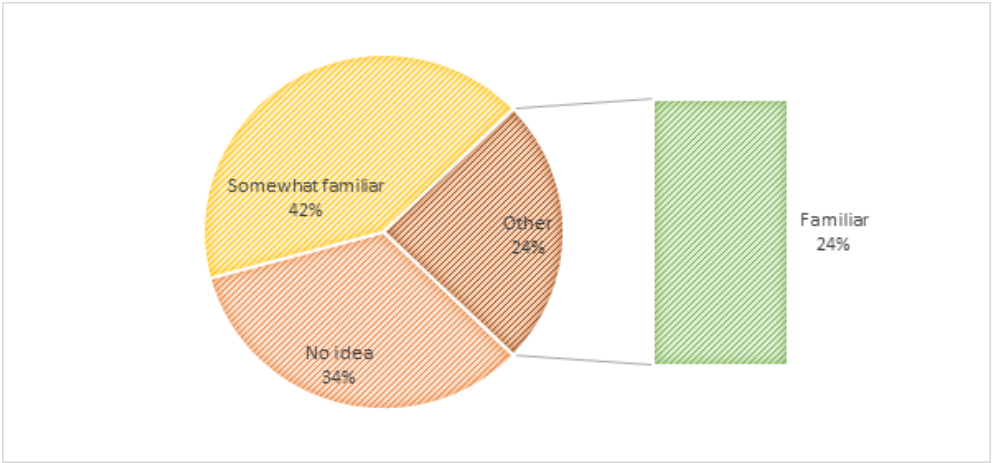
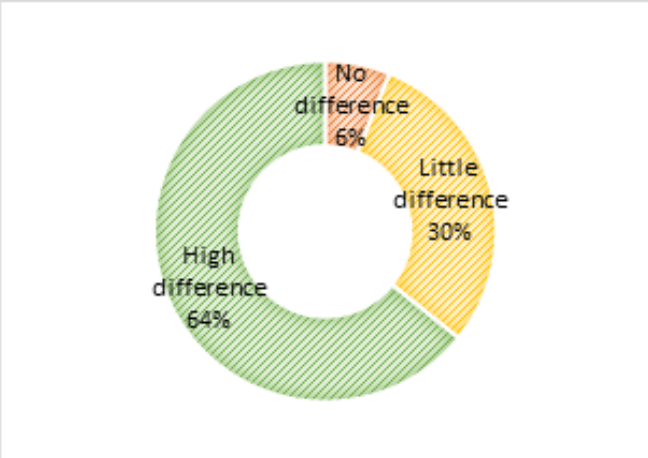


Fig 1.8: Awareness/Knowledge on organic certification & labelling while the purchase of organic products

The awareness/knowledge of organic certification & labelling while the purchase of organic products has been presented in figure 1.8. It shows that 66 per cent of the respondents are familiar with the importance of certification and labelling and they prefer to purchase certified/organic labelled products from the market.

Consumers also face difficulties in recognizing the perfect organic products and are more dependent on the physical appearance of the product packing. Among them, 24 per cent respondent is fully aware on organic certification & labelling, 42 per cent are somewhat familiar and 34 per cent have no idea on organic certification & labelling on the purchase of organic products. Therefore, this highlights the need to educate consumers on organic certification & labelling during the purchase of organic products.

Figure 1.9: Price, Taste, Quality difference faced between organic and conventional products



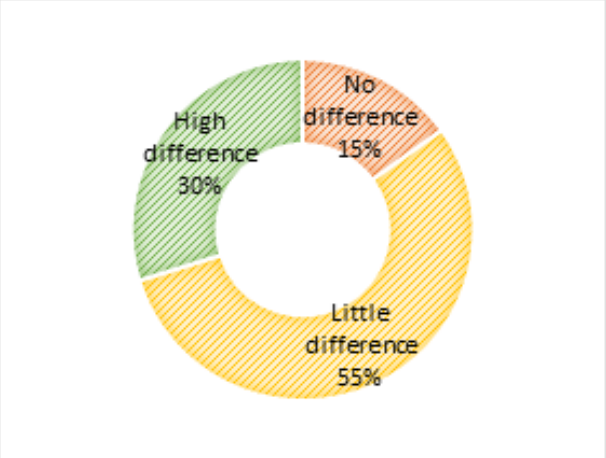


Fig 1.9 (a): Price difference

Fig 1.9 (b): Taste difference

Price difference difficulties between organic and conventional products have been depicted in figure 1.9(a). Most of the respondents have felt high difference (64 per cent) in the price of organic products over conventional products. While 30 percent of the respondents noted little difference in the price of the organic produce compared to conventional products and only 5 percent noted no difference in the price. Though the price of organic products is high compared to conventional products and the difference in buying is due to the income earned by the family & found organic food as elite.

Taste difference faced between organic and conventional products has been depicted in figure 1.9(b). Most of the respondents have felt a little difference (55 per cent) in the taste of organic products over the conventional products as no artificial taste agents are added. While 30 percent of the respondents felt a high difference in the taste of organic product compared to conventional produce and 15 per cent felt no difference in the taste.

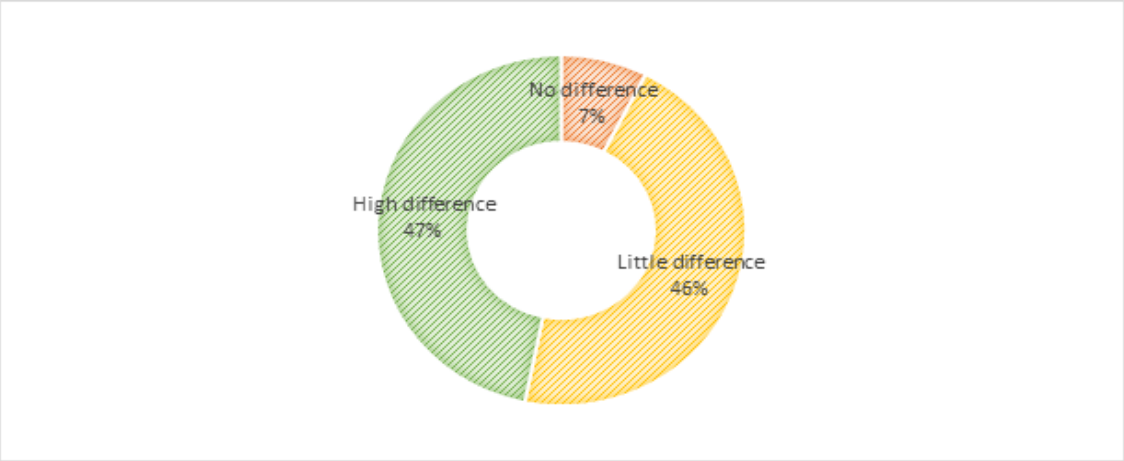


Fig 1.9 (c): Quality difference

Quality difference faced between organic and conventional products has been depicted in figure 1.9(c). Most of the respondents have felt difference (93 per cent) in the quality of organic products over conventional products, as the quality in terms of natural products without chemicals for good health while 7 per cent of the respondents felt no difference in the quality organic product compared to conventional products.

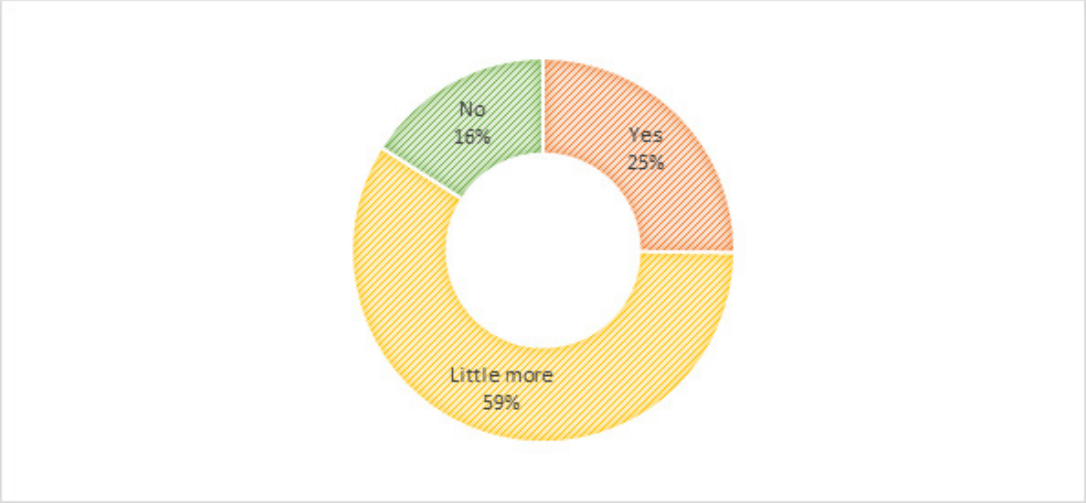


Fig 1.10: Respondents willingness to pay high price for the organic products

The figure 10 depicts the per cent of respondents' willingness to pay a high price for the organic products. Among the respondents, 59 percent were ready to pay a little high for the organic product by taking their health and environment into consideration. Purchasing of organic products by respondent side mainly depends on their family income and food quality habits. Therefore, there is a need to make the organic products available to all groups of people at a considerable quality,

Other thoughts/comments given by respondent

- Price should be less than the present (Price Reduction)
- It's very important to create awareness about need of organic products
- Gives a hand towards the development of a healthy and wealthy society and environment.
- Good idea to start organic products business
- Should buy organic products and make our life healthy and free from diseases
- Lack of knowledge for farmers at initial levels for demand and supply
- Need to provide awareness among organic farming
- Organic farming is good for health so everyone try to eat organic food
- Organic produce cannot be identified through organic certificate, buyers have to certify organic farmers.
- Geniuses is missing in the organic products
- It would be better if organic products are available to the common man in the common place. The product should be available at reasonable and affordable prices.
- Need to establish few more shops
- Most farmers supports conventional farming

-Comments by Respondents

quantity and price.

Section 2: To identify and study the major institution and organization supporting organic farming in Bengaluru, Karnataka

In this objective, the semi-structured close-ended interview schedule was used for primary data collection. This has helped in providing the required information about the policies, schemes, support and work of the selected major institution and organization (public, co-operative & private) supporting organic farming and related sector.

Primary data has been collected by conducting face to face interview and observation method with the institution staff at Bengaluru. The data presented in this section will be useful for the further adoption of organic farming and its related sectors. The detailed information on major different organization and institute has been presented below:

2.1 Government of Karnataka, Department of Agriculture, Organic farming division

ORGANIC FARMING POLICY 2017

Promotional projects for organic farming in the State:

Savayava Bhagya Project

This is an ambitious project of the Government of Karnataka; which has been initiated by e-tendering at Hobli level and harmonized with chosen transparent NGOs since 2013-14. The selected NGO has to take the task of adopting 100 hectares of area in each Hobli. Currently, this project is under implementation in 566 Hoblis and an area of 63,677 hectares involving 53,829 farmers has been brought under the project. The project area has been brought under group certification through Karnataka State Seed and Organic Certification Agency (KSSOCA). An amount of Rs. 4657 lakh has been reserved for the project during the year 2016-17.

Organic Certification

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Paramparagat Krishi Vikas Yojana (PKVY)

Centre sponsored Paramparagat Krishi Vikas Yojana (PKVY) is being implemented in all districts and taluks of Karnataka in clusters of 50 acres since 2015-16. In each taluk, three clusters have been chosen in a total area of 27,250 acres in State and 25,968 farmers are benefiting from this project. A sum of Rs. 2,630.00 lakhs has been reserved for this project during the year 2016-17.

Organic Farming Adoption and Certification (OFAC)

This project was started during December 2018 and this year 1st instalment has been released to farmer groups. Under the project Government of Karnataka has released an amount of 26 crores to KSOCA and almost 12000 farmers got free organic inputs producing components and free organic certification for 3 years.

Organic Karnataka at a glance

Table 2.1.1 Organic farming in Karnataka

1.	Total cultivated area under certification (including in-conversion)	93,963 ha
2.	Total certified production (tons)	2,82,633
3.	Total area under wild harvest collection	39,683 ha
4.	No. of certified operators	246
5.	Total no. of farmers	96,612
6.	No. of organic farming research institutes	08
7.	No. of model private farms	109
8.	No. of NGOs involved in promotion of organic farming	129
9.	No. of marketers	19
10.	No. of private outlets/retailers/stores	513
11.	No. of mega stores with organic shelves	48
12.	No. of exclusive organic restaurants/caterers in Bengaluru	20
13.	No. of operators/processors and exporters	124

Table 2.1.2 Important crops grown under organic farming

1.	Cereals and millets	Non-Basmati Paddy, Maize, Bajra and Ragi
2.	Fruits	Mango (Alphanso, Neelam, Totapuri, Kesar, Sindura), Pineapple, Banana
3.	Dry fruits	Cashew Nuts
4.	Spices and condiments	Arecanut, Black Pepper, Chilli, Cinnamon, Cloves, Ginger, Turmeric, Nutmeg, Parsley, Bay Leaves
5.	Sugar crops	Sugarcane
6.	Plantation	Coffee, Coconut
7.	Pulses	Black Gram, Green Gram, Bengal Gram, Horse Gram, Pigeon Pea
8.	Oilseeds	Sesame, Ground Nut, Soyabean
9.	Medicinal & Aromatic Plants	Amla, Ashwagandha, Brahmi, Tulsi, Citronella, Chia, Gymnena, Lemon Grass, Moringa, Palmarosa

- Important organic commodities exported directly from the State: Mango Pulp, Cane Sugar, (based on export TC issued by certification bodies) Cashew Nuts and Pineapple juice
- Crops having high export potential: coffee, coconut, spices, pulses, medicinal and aromatic plants
- Future potential crops/products: fruits and fruit products, vegetables and millets

Source: APEDA 2015-16

During the 1990s, innovative farmers initiated the organic farming movement in Karnataka State and the movement gained momentum. The advent of intensive chemical farming and its effect resulted in the close stagnant levels of productivity in many crops. This made farmers turn debt trap and led to higher cost of farming because these crops required more of external inputs like; chemical fertilizers, pesticides and water. With the increase in the cost of cultivation, a declining net income was observed. Hence, this led to an increase in the number of suicides among farmers.

Then many Karnataka farmers felt that there is a need to fight against the high yield variety and green revolution fertilizer-pesticide package. Finally, they realized the need for organic farming is the only alternative for this problem and returning to traditional sustainable farming without impairing the ecosystem.

Organic farming is a system with the broad principle of 'live and let live', the best sustainable production system, which increases the agro eco-system health, also improves biological cycles and soil biological activity with the aim of higher productivity and profitability.

To keep the momentum of farmer's interest and agricultural development, the Government of Karnataka framed a State Policy on Organic Farming during March 2004. The policy focused on achieving conservation of biodiversity, development of mixed farming, soil and water conservation including rainwater harvesting, on-farm production of organic manures, land regeneration, assistance for certification, processing, marketing, credit, export promotion, training and publicity among other initiatives. This initiative witnessed a stable development in the organic sector; it has seen the increased certified area from a mere 2,500 ha during 2004-05 to 93,963 ha as on March 2016. Now, the state stands 5th in the country in terms of total organic certified area and 3rd in terms of certified production.

"Savayava Bhagya Yojane" Scheme was announced by Hon'ble Chief Minister, Government of Karnataka, in the annual budget of 2015-16, to strengthen and consolidate the gains by providing support for the certification process, establishing farmer's federations and developing market linkages. 14 Regional Federations of Organic Farmer's Associations have been established to facilitate organized marketing of organic produce. The funds are proposed to assist these federations to take up organic produce collection, grading, value addition, processing, packing, brand development and marketing apart from consumer awareness programme and related activities.

The journey of "Savayava Bhagya Yojane" has created a vast market opportunity for the farmers, helped them to expand the area under organic farming and made the public to convince about the

health and nutrition benefits of organics and millets. It is the time to explore this opportunity for the benefit of farmers of the state. The policy is aimed at integrating backwards-forward linkages to suit the current dynamic market conditions and consumer preferences towards health consciousness. The ultimate objective of the policy is to provide organic farmers with an organised market for their products and to popularize organic foods and millets as "Super Foods" among the consumers.

Vision, Mission and Objectives

Vision

To transform the state's agriculture front into a sustainable, remunerative, respectable occupation and to enable the farmers to reap the benefits of dynamic market opportunities. The needful call for action are culture of innovation, continuous improvement towards best practices, diverse ways to ensure transparency, wider sustainability interests, holistic empowerment from farm to final consumer and true value & fair pricing.

New perspectives five dimensions are:

- Ecologically Sound
- Economically Viable
- Socially Just
- Culturally Diverse
- Transparently Accountable

Mission

- To bring organic farming into a mainstream agricultural production system, this would help in changing at least 10 percent of the cultivable area of the state into organic farming by 2022.
- Allowing state millet farmers to acknowledge additional income of 25 to 30 percent by optimizing demands on the organic market.
- To focus on commodity or crop-specific groups to generate a bulk quantity of organic foods and millets to meet the growing demand for domestic and export market.
- To improve the quality of organic foods and millets by extending state support to investors for the establishment of necessary supply chain and infrastructure facilities to process and marketing.
- To safeguard the interest of the consumer's suitable regulatory measures formed, which would facilitate in upholding the principles of traceability, accountability and transparency in production, handling and marketing of organic produce. This helps in ensuring a higher level of confidence in organic produce among the public.

Objective

The following objectives aim for the overall growth in the organic sector and promotion of millets in the state with the goal of achieving sustainability in agriculture, providing safe and nutritious food

for consumers and ensuring remunerative price for producers:

- To maximize the production and productivity of organics and millets.
- To enable farmers to mitigate and adapt to climate change and drought situations effectively.
- To maximize crop and farm diversification thereby enhancing protection against crop losses due to adverse weather conditions.
- To increase farmer's income by facilitating value addition to organic products and millets, thereby reducing post-harvest losses and other wastages.
- To create and strengthen local institutions for effective service delivery and sharing of knowledge and skills.
- To bring in more transparency in production, handling and marketing of organic products and to safeguard the consumers' interest.

Implementation Strategies

1. To achieve sustainable organic production practices by conservation and protection of agrobiodiversity including indigenous and traditional varieties of crops, herbs and shrubs, local breeds of animals, poultry, native and wild species of fishes, etc. following mixed cropping and intercropping to increase crop diversity. Integrating all organic land-based activities for maximizing farm production and productivity using local/indigenous breeds according to agroecological regions to meet the demand for organic products. Special farming systems in dryland areas to ensure adequate biomass and organic fumes. Promoting inputs on the farm that reduce the cost of buying foreign inputs. Providing education and help to farmers to guarantee the conservation of soil and water and encourage the use of renewables in organic farms. Enhancing and amplifying local knowledge on farming and ethno veterinary practices related to animal health care.

2. Organic area expansion can be done by creating awareness and opportunities like strengthening organic farming as a popular movement through people representatives, local and civic bodies and all other enthusiasts of the society. Promoting cultivation of millets as healthy foods and as a shelter against climate change and global warming. Popularizing organic commodity and crop focused production clusters in potential areas to generate bulk quantity for domestic and export markets. Popularising organic farming in cities and towns in the form of urban farming, kitchen or terrace or vertical gardening, etc. Certain favourable taluks or districts of Western Ghats shall be identified as fully organic, encouraging Eco Agri-Tourism by extending additional incentives over the tourism policy covering all the components of organic farming.

3. Adoption of group-centric approach in production, certification, produce handling and marketing by assisting, supporting and guiding in the formation of Farmers Associations and Farmer Producer Organizations/ Companies/ Federations, etc. Adopting a participatory approach in planning and implementation of all schemes and programs related to organic farming. Encouraging groups to carry out organic production of seed and planting materials by adopting the concepts of seed village, seed banks and local seed distribution. Connecting groups for the creation of awareness,

training and handholding of farmers continuously and formation of Goshalas, Pinjrapoles, livestock farms and composting units. Involving farmer's groups in the process of building traceability documents and adoption of Participatory Guarantee System of certification. To make a fund available for producers, it would be easier to buy organic goods to prevent hardship and to attach their working capital. Promotion of contract farming between farmers, processors and marketers of organic foods and millets.

4. Promotion of processing and value addition of organics and millets is an important aspect, this can be done by:

- Encouraging to setup additional incentives in processing, supply chain infrastructures and logistics for organic foods and millets.
- Collaborating with research and development institutions and external agencies in market survey, demand estimation and product development.
- Establishing linkages to increase value addition, between processing industries and research and development institutions.
- Creating separate storage facilities for organic produce at agro-parks, APMC yards and other state-owned agro centres and the infrastructure facilities owned by Government agencies.
- Encouraging small food industry and start-ups & business incubators of organic produces and millets

(Target Beneficiaries are farmer's associations, producer companies, farmer federations, private companies and individuals. And conditions for development of organic market are strong consumer demand, high degree of involvement by food companies, sales through conventional supermarkets, moderate (less than 50%) organic price premiums, one dominating label and professional promotion)

5. Creation of Branding, labeling, packing and marketing and export:

- Developing a state's unique brand to ensure the authenticity of the produce cultivated, processed, packed and distributed.
- Uniform labelling of the product with state hologram to facilitate traceability and label as per food safety and standards (FSSASI) regulations.
- Encouraging the packaging materials which are biodegradable, recyclable, reusable and eco-friendly.
- Developing separate facilities for marketing in the current channels viz., SAFAL/ APMC/ HOPCOMS / NCS/ KAPPEC/ KVIB, etc.
- Establish retail eco-stores/ modern retail outlets with public-private partnerships.
- Boosting the consumption of organics and millets in schools, hostels, hospitals, public sector canteens, corporate food joints, etc.
- Exporting of organics and millets along with special incentives for packing, labelling and branding.
- True value and fair pricing to internalize costs, encourage transparency for consumers and to empower farmers as full partners.

(Target Beneficiaries are Jaivik Krishik Society, HOPCOMS, KVIC, Farmers associations, Producer companies and individuals.)

6. Measures to strengthen certification and quality control by:

- Third-party certification process will be encouraged with more transparency and accountability to facilitate export and niche markets.
- For the domestic market, the Participatory Guarantee System of certification shall be made compulsory.
- Certification process for animal husbandry, dairy, poultry, fisheries and minor forest products.
- Framing suitable regulatory measures and its effective enforcement to ensure the quality of organic produce. Registration is compulsory for wholesale and retail dealers of FSSAI transactions and sales in the domestic and export markets of organic goods and products. Setting up laboratories for pesticide residue testing and nutrition analysis and this shall be made mandatory in certification procedure.
- Requesting Government of India to bring organic inputs, bio-fertilizers and botanicals under existing Fertilizer Control Order/ Insecticides Act/ Seed Act.
- State Agricultural Universities shall be given the responsibilities for ensuring the quality of organic inputs.

7. Measures to strength education, research and extension network :

- Educating students, the importance of eco-friendly farming and consumption of safe food.
- Introducing degree course on organic agriculture at the State Agriculture and Horticulture Universities.
- Participatory research programmes along with organic farmers at different agro-climatic zones to develop integrated, remunerative and adaptive organic farming systems.
- Scientific validation and documentation of ancient wisdom, knowledge and existing practices of organic farmers.
- Rewarding Farmers' innovations in organic agriculture.
- Protecting a local variety of crops, animal breeds and fish species.
- Breeding of crop to develop varieties which are suitable for organic production systems.
- Carbon trading by developing a framework and creating opportunities for organic farmers.

8. Building mutual relationships to create public awareness:

- Building the goodwill and loyalty among the producers and consumers through sponsorships and partnerships.
- Creating consumer awareness by demonstrating the importance of organic food and millets through organizing regular events such as trade fairs, workshops, melas, savayava santhe.
- Release of successful organic stories through the print, electronic and social media in order to draw the attention of the public.
- Creation of e-platform & mobile Apps for the direct marketing of organic products.
- Development of a council for producers, traders, industrialists, and other related sectors to promote organic trade

9. Planning, monitoring and implementing policy guidelines through administrative setup:

- Establishing a mission consisting of professionals from different sectors to implement the policies and programs of organic farming.
- Evolving guidelines to finalize the assistance and subsidy for policy programmes by State Level Empowered Committee (SLEC) in consultation with the State Advisory Committee on organic farming.

10. Financial implication policy shall be implemented through merging all related schemes in an integrated approach. The empowered committee at the state level shall have the powers to allocate the funds to different schemes and agencies. Validation of the policies will be done by regular timely review per the approved requirement of the Government.

Organic & Millets 2019, International Trade Fair

The "Organic & Millets 2019-International trade fair" was held in Bengaluru, Jan 18-20, 2019 at the Tripuravasini Palace Ground. This trade fair was organized by Dept. of Agriculture, Govt. of Karnataka in collaboration with KAPPEC as the nodal agency, International Competence Centre of Organic Agriculture (ICCOA) as the knowledge partner and MCA as event partner. The "Organic & Millets 2019-International trade fair" was inaugurated by Hon'ble Chief Minister of Karnataka, in the presence of Hon'ble Minister for Agriculture and other dignitaries. The 'K-Source' Karnataka Pavilion showcased the smart agriculture policies, practices, technologies, climate and soil of the state which showed Karnataka, not just a producer, but the enabler of Next Gen Smart Food, new businesses, technologies, producers, consumers and markets.

MAJOR COMPONENTS OF THE EVENT

EXHIBITION: Covering 10,000 sq. mt (>173 stalls)
INTERNATIONAL CONFERENCE: Covered latest trends in production, processing, certification, market
B2B, B2F: Business meets, supply chains and farmers federations
ORGANIC FOOD COURT and Awareness programs for the consumers

OTHER COMPONENTS:

- Farmers workshop for 2 days
- Live demo on dishes made from Organic and Millets products
- Drawing competition for children Cooking competition
- Traditional Cultural and Heritage show from different parts of India

- Target Visitors: Farmers, Organizations, Producers Wholesalers, Retailers, Buyers and Sellers - Food and Beverages, Central and State Govt agencies and others, Exporters, Importers and Trading Companies, Restaurateurs, Chefs and Caterers, National and International Organic Experts & Speakers, Supermarkets, Department Stores, Specialty Chain Stores, Food manufacturers and processors, Agripreneurs, Service companies (Certification agencies, Agriculture institutions, food consultants), Health-conscious consumers, Students and Nutritionists and more.

2.2 Karnataka State Seed Organic Certificate Agency

Karnataka Government established Biological Certificate Division, named the Karnataka State Organic Certificate Agency (KSOCA), to regulate the quality of organic products available to consumers and also encourage organic farming. It was established in the year 2013, and consequently, the organization was renamed as "Karnataka State Seed and Organic Certification Agency (KSSOCA)". Since the establishment, there is an increasing trend in the certification activities year after year.

Goals of KSSOCA

- To provide quality certified seeds to the farmers to increase production & productivity.
- To increase the area under organic seed production and also the availability of certified organic seeds to the farmers so that there will be an increase in the seed replacement ratio (SSR).
- To inspect seed processing plants, to ensure with no admixtures of other kinds and varieties.
- To reduce the failure of seed growth at field and lab level.
- To improve the infrastructural facilities of KSSOCA for effective and timely certification activities.

Objective of KSSOCA

- To certify seed of any notified kinds or varieties under section-5 of seed act 1966.

- To maintain the list of the source of breeder and foundation seeds approved by the Central Seed Certification Board.
- Outlining the procedure properly for the submission of application for growing, harvesting, processing, storage, labelling and tagging of seeds intended for certification till the end.
- To verify whether the receipt of an application for certification of a variety, is eligible for certification under the prescribed standards.
- To inspect seed production fields, to ensure minimum standards for isolation, roughing, use of male sterility and others to meet the required standards for certification.
- To inspect the seed processing plants in order to avoid admixture in a variety.
- To inspect the seed lot's produced and take samples as per procedure and test, to ensure the prescribed standard for certification.
- Grant certification under the provision of the seed act.
- To ensure actions for all the stages of seed certification are taken carefully.
- To conduct educational programs for the promotion of use and produce certified seeds and products from all the sources of production.

Procedure for Organic Certification

Applying to KSSOCA

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Application Package

↓

(FAQ, Broacher, Procedure, Scale of fee, NPOP Std copy)

↓

Submission of filled application form

↓

Sending offer letter & agreement

↓

Receipt of payment

↓

Registration in tracenet

↓

Scheduling of inspection date

↓

Inspection

↓

Entry of inspection findings (NCs) in tracenet

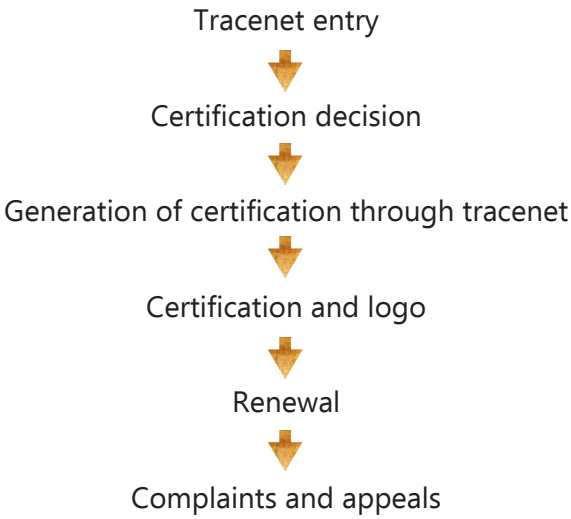
↓

Sending of inspection summary & final invoice

↓

Receipt of action taken report (closing of NCs in tracenet)

↓



Organic Certification Services available in KSSOCA

1. Organic Farm (Individual)
2. Group of Organic Farmers (ICS)
3. Organic Wild Collection
4. Organic Product Processing
5. Organic Product Traders
6. Organic Input Approval

Duties & Responsibilities within KSSOCA

Director

- Develop & implement a development plan, policies, budget, set & review performance & financial targets etc. for KSSOCA.
- Appoint & develop the required staff.
- Co-ordinate, report & participate in all Board meeting as a member secretary.
- Act as appellate authority to take decisions on appeals submitted by the operators.
- Undertake other duties as approved by the chairman/governing board.
- Approval of quality & operating manuals.

Jt. Director

- Assist the director in all the above mentioned duties.
- Any other work as entrusted by the director.

Dy. Director (Quality Manager)

- Registration of operators.
- Ensure efficient day-to-day functioning of the certification system in the line with aims & objectives of KSSOCA.
- Enforce decisions of the certification committee.
- Communication to operators regarding open non-conformities.
- Assigning duties of inspection & certification to the staff.
- Issuing scope or transaction certificate & maintenance of records.
- Evaluating staff performance and develop & maintain a quality management system.
- Working along with APEDA.
- Revise, update & develop Manual as per NPOP norms.
- Any other work as entrusted by the director.

Asst. Director (Evaluator)

- Receive, scrutinize application forms & submit to Quality Manager for registration of farms/units, reply to queries of clients, send application package & offer letters to operators, etc.
- Receive inspection reports, evaluate & submit to the certification committee for further needful & maintain inspection & certification records.
- Coordinate with the accounts section regarding receipt of payment towards inspection & certification charges.
- Supervise trace net entries.
- Preparation of annual report.
- Assist the quality manager with other technical / certification activities & any other duties as assigned by a higher officer.

Organic certification inspection (Auditor)

- Undertake inspection in compliance with NPOP requirements, organic certification standards & procedures.
- Visiting operators, conduct audits, timely raise inspection reports as per procedure.
- Keep confidential, if any commercially sensitive information gained during inspection work.
- To make trace net entries & to attend training sessions as and when required.
- Any other duties as assigned by higher officer.

2.3 ADITI Organic Certification Pvt. Ltd (With new idea of organic certification)

ADITI Organic Certification Pvt. Ltd is one of the leading companies engaged in organic certification service providers over a decade in India with its objective to be leading in quality and the organic integrity of the products from origin to destination among National and International certifiers in the agriculture and food processing area. ADITI is an ISO Guide 65(EN 45011) inspection and certification body which assures independence, competence and impartiality in its decisions. ADITI is a private limited company formed under Company Act, 1956 (No. 1 of 1956), Govt. of India, headquartered in Bengaluru, Karnataka, India.

ADITI has covered its certification process in 17 states with 600 clients PAN INDIA, has certified land of total area 34,018.33 hectare and in-conversion area of 93,706.46 hectares. More than twenty countries import their certified products.

ADITI's vision is to see themselves as strong contributors to sustainable development and actively co-operate with all relevant stakeholder at each step of their organic approach. Their strategy is to provide straightforward, effective certification services that are reliable and that meet the individual needs of their customers on the market.

ADITI is nationally accredited to NPOP by the National Accreditation Body through Agricultural and Processed Food Products Export Development Authority (APEDA) under the Ministry of Commerce and Industries and accredited by National Accreditation Body, GOI to offer organic certification as National Organic Programme (NOP), USDA standards.

ADITI is internationally accredited by the Canadian Food Inspection Agency (CFIA) through the Committee on Accreditation for Evaluation of Quality (CAEQ). Aditi is an approved verified organization for Starbucks C.A.F.E practices ensuring the ethical sourcing of coffee and also involved in Integra, a socio-environmental and Fair Trade Program created by IBD Certifications, Brazil.

ADITI is promoted by qualified agricultural professionals with expertise in the field of inspection and certification of organic agricultural and organic textile products with sufficient hands-on experience. They have been involved in the establishment and operations of a major international inspection and certification body in India for almost two decades. Their experience in inspection and certification spans over a range of areas like crop production, agricultural inputs, animal husbandry, beekeeping, food processing and handling, organic textile-manufacturing chains, Good Agricultural Practices (GLOBALGAP), GMP etc.

Aditi has recently taken initiatives to digitize the process of certification through SourceTrace Systems

ESE™ Certification module to get real-time information on projects. SourceTrace ESE™ Agri help assists to capture all interactions at the touchpoints of the smallholder farmers at the field level for enhanced traceability and improved accountability of the value chain.

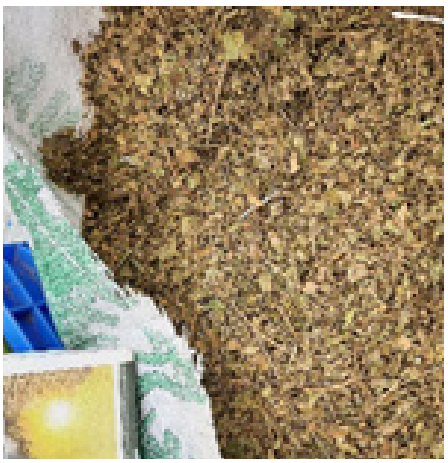
ADITI Organic Certification Pvt. Ltd has recently initiated and engaged in Research and Development on Organic Farming, Nelamangala taluk, Bengaluru, Karnataka. At Research and Development, they follow all the organic practices in the chain of crop production for different crops and experiment new practice for the better quality of soil and yield. The small quantity of the product produced at R&D is sold at ADITI headquarter office.

Visit to R&D

Different method of developing composting from animal waste and plant dry matter

Jeevamrutha Preparation

Coconut Mulching



Dry waste mulching

Planting and seed production

Mango Propagation

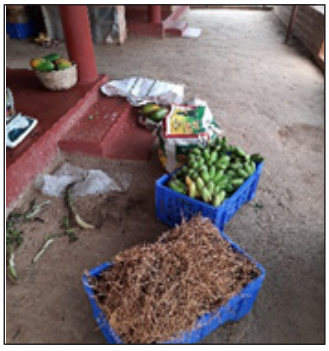
Drumstick seed production

Different cropping system

Mixed cropping at poly house

Multistage cropping stage

Organic produce for sell at headquater from R & D field

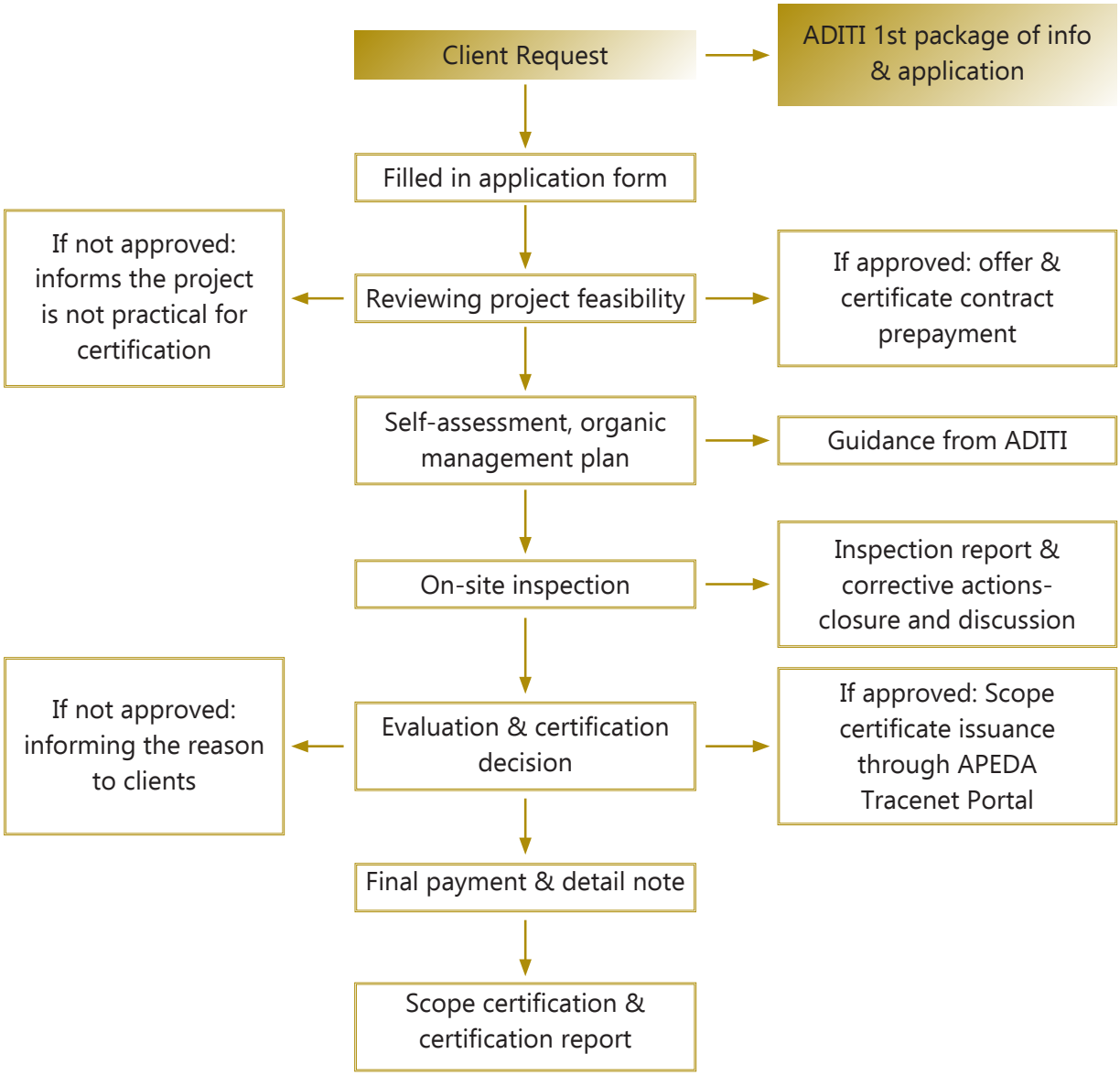


Fresh Harvest

ADITI R & D Farm

- R&D farms are set up in Soladavanhalli, Kempohalli, Nagenahalli, Gollahalli and Bhudhihal.
- Best practices in organic farming are being experienced and package of practices prepared for circulation among the farmer community.
- Success stories so far include Rose, Lemongrass, Mango, Banana, Sweet Onion, Turmeric, Centella Asistica, Ashwagandha.
- 140 species medicinal plants are cultivated at the farm.
- Paddy cultivation using traditional methods are being carried out. Transfer of knowledge and skill from older to new generation is the primary focus.
- Soft marking of farm products to consumers

Organic Certification process followed:



2.4 Research Institute on Organic Farming

University of Agricultural Sciences, GVKV, Bengaluru-560065, Karnataka, India

The recent decade's success of long way Industrial Agriculture and Green Agriculture has masked significant externalities, affecting the health of human, natural resources and methods of Agriculture. The increasing consciousness about the safeguarding of environment and health, due use of agrochemicals has bought a major transformation in consumers preference in food quality. There is raising demand for organic food due to the significant negative externalities.

Karnataka has the rich potential in adopting organic farming, as its farmers are progressive, innovative with good concern towards the environment. Since 2004, the government of Karnataka has been on track to make progress and accomplish organic agriculture through the Government of Karnataka's Organic Farming Policy. Karnataka is in 5th position in India in terms of the organically certified area including area under cultivation and 3rd for organically certified production.

University of Agricultural Sciences, GKVK, Bengaluru has been giving more importance to organic farming and established Research Institute of Organic Farming in 2008. Research Institute on Organic Farming is actively serving the farming community and organic farmers in the promotion of organic farming; it is involved in research, demonstration and extension in organic farming. The total area available for organic farming research and demonstration under the University of Agricultural Sciences, Bengaluru is 34 hectare.

Research Institute on Organic Farming objectives

1. Validation of existing organic farming practices and local knowledge.
2. Development of various production technologies for the production of liquid organic manures, FYM, different types of organic compost, techniques for effective recycling of organic manures, etc.
3. Identify and promote suitable Integrated Framing System for different agro-climatic zones.
4. Development package of practices for different organic crops.
5. Development of suitable bio-fertilizers and bio-pesticides for organic farming and its promotion.
6. To promote capacity building to the stakeholder of organic farming.

Research Institute on Organic Farming activities and services

1. Training and technical guidance to farmers, NGO's, organic growers and in line departmental officials on organic farming.

2. Production of Bio-fertilizers & Bio-control agents in mass and its supply to the farming community and organic growers.
3. Testing organic inputs i.e., organic manures, bio-fertilizers, liquid organic manures etc., for the private and government agencies.

The following steps are taken to fulfil the objectives

1. Under Research Institute on Organic Farming University of Agricultural Sciences, Bengaluru is engaging nine research stations at two different agro-climatic zones in south Karnataka. They are Organic Farming Research Station – Naganahalli, ZARS- VC Farm Mandya, ARS-Chinthamani, ARS- Balajigapade, ARS- Madenur, ARS- Pavagada, ARS- Tiptur, ARS- Gunjevu, ARS- Arasikere.
2. Organic blocks have been created exclusively for conducting field trials and demonstrations for organic farming on an area of 5 ha at 'J' block, GKVK.
3. At GKVK a separate research block has been maintained for PG students to conduct organic experiments.
4. Organic Farming Research Station at Nagenahally, Mysuru has been completely converted into organic farming since 2008.
5. Unique one acre model organic vegetable has been developed for demonstration at Research Institute on Organic Farming field unit, GKVK, UAS (B), since 6 years.
6. Well established mass production laboratory at Research Institute on Organic Farming for bio-fertilizers and bio-control agents (both solid and liquid form), made available to farmers, organic growers and KVK's.
7. Studies are on trial to develop organic package on the use of various organic source combination (oilseed crops like sunflower, groundnut, niger and sesamum) with liquid organic manure.
8. Development of vermicomposting and Azolla production unit at the field.
9. Organic experimental blocks and training hall facilities are available in the centre for conducting training programmes in organic farming.
10. Developing an organic package of practices for Nutri-cereals is in its fag-end stage and studies on organic nutrient management in French bean, lady's finger, chilly, tomato, black cumin, coriander and rice bean.

Outcomes of activities

1. Presently the research centre is pioneering in the use of liquid manures like vermi-wash, liquid bio-fertilizers & bio-control agents, waste decomposers, digester liquid organic manure, nutrient management through Beejamrutha, Jeevamrutha & Panchagavya, botanical extracts in pest & disease management, etc., This has had a major impact on growth and production when used in various concentrations at critical stages of plant growth..

   Example; Application of fish nutrient solution 2.5% at vegetative, 5% at flowering, 2.5% at the pod development stage in field bean has shown pod yield of 17.5 quintals per hectare and seed yield of 13.79 quintals per hectare.
2. Maximum mean fruit yield of 83.38 quintals per hectare in lady's finger was found, by application

of panchagavya at 3% at vegetative stage and jeevamrutha at 500 litres per hectare at the flowering stage.

3. Scientific validation of zero budget natural farming: Analytical studies of Beejamurtha and Jeevamrutha liquid organic manure were done. These two are rich in micro-organisms
4. It was analysed that Beejamurtha, which is used for seed treatment has alkaline pH (8.00), with 2.38% N, 0.127% P2O5, 0.485% K2O, Fe-168ppm, Mn-16 ppm, Cu- 36ppm & Zn-18ppm nutrient content and it should be used on the same day of its preparation.
5. Jeevamrutha (liquid manure) is used for nutrient management in crop production. It is acidic (pH 4.85) in nature with 1.96 % N, 0.173% P2O5, 0.280 % K2O3, Fe-318 ppm, Mn- 46 ppm, Cu-51 ppm & Zn-12 ppm nutrient content. This liquid has to be applied 7-10 days of its preparation and application in this period and has a high microbial load which is beneficial for plant growth.
6. From various studies conducted at the unit, it has been found that bio-digester tank is the suitable tool for the production of large quantities of liquid manure using animal wastes and crop residues, waste, weed, etc.
7. Organic package of practices has been developed for finger millet, maize, red gram, groundnut by using liquid organic manures.

Organic Finger Millet, Maize, Redgram & Groundnut production, the following recommended application has increased their yield:

Basal application of 10 t FYM followed by application of N in the form of bio-digester (2 equivalent splits at 25-35 DAS followed by 50-60 DAS) or Application of 100% recommended nitrogen in the form of compost as basal, followed by seed treatment with Beejamurtha and application of liquid organic manure Jeevamrutha at rate of 400 l per acre in split at 25-30 and 50-60 DAS

2.5 JAIVIK KRISHIK SOCIETY

President: Dr K. Ramakrishnappa
CEO: Horticulture officer

Jaivik Krishik Society (JKS), is an initiative by the farmers and the Government of Karnataka in organic farming. The society acts as a parental agency for the organic producers, stakeholders and market functionaries. The society aims to create awareness among farmers and consumers about the sustainable farming, food safety and also playing a role of facilitator in regulating accountability, transparency and traceability of the organic produce in the state.

Jaivik organic stores/shops/mall shows the organic wave spread across the state. The outlet setup

by JKS is working towards strengthening organic farming in the state. JKS is working to eliminate the "elite food" stigma from organic items and make them open to the general public. JKS root started from the year 2002 when the non-chemical farming movement just was started along with other isolated efforts of organic farming communities and farmers in the parts of the state. Though the farmers did organic farming passionately, there was lack of proper marketing facility and this society created a bridge between the farmers and the consumers.

Jaivik Mall at Lalbagh

The idea of JKS was initiated by Dr K. Ramakrishnappa, ex. Additional Director of Horticulture, he was one of the bureaucrats working for the environmental safety & encouraging organic farming and instrumental in the formation of this farmer Government association. In the year 2004, the executive committee of practicing organic farmers and groups was formed with Dr K. Rama Krishnappa as president. JKS had two-fold agenda, they are extension and training programmes ensuring that enthusiasm for non-chemical farming and grower sustenance but presently the main focus is on extension fold more and providing the marketing wing to sell organic farmer produce. JKS has a General Consultative Committee and all actions in an ongoing phase are related and complementary to each other and inspire farmers.

The Karnataka Government has introduced Organic Policy and has taken over certain roles and continues to work in the rest of the government's organic farming programmes, as was the case in 2004.JKS procures all the products from its member groups. Fruits and vegetables are procured

directly from the field to ensure the traceability according to the price fixed by the market (follows HOPCOMs rate, JKS buy at the rate of 20 percent less from farmers and sell 10-20 percent more to consumers). Generally, here the organic farmers get 25 percent higher price than a conventional grower. JKS minimises the role of middlemen with no financial risk as payment is done directly to the farmers & group on spot or immediately through a bank group account. Compared to conventional market vegetables, grains and pulses are 25 percent more cost at JKS, more preference are given to organic farmers produce and in-case they do not get certain products from farmers they go for company products.

From the year 2008, JKS started offering membership only to organic farmers groups and not to individual organic farmer due to an increase in the individual organic grower interest. The society is also promoting the PGS system of certification, where the farmers do their certification themselves in groups. This has helped farmers to keep a track of all the processes and members of the group are aware of all the activities happening in each other's field with a lower chance of cheating. This system has been recognized by the state government and the international forum for organic farming. Presently JKS has more than 300 farmer's society groups. As the market expanded certification was made compulsory, JKS took up group certification. Also, the produce is randomly tested in the lab at the bio-centre for ensuring the quality. JKS has been creating awareness & disseminating about the benefit of consumption and production of organic produce through organized organic trade fair & mela while facilitating market linkage for the organic producers. With the increase in the sale, the annual average turn-over is more than one crore in the recent financial years. JKS handles its full capacity, about 10-15 percent of the organic supply chain; the society has organized supply chain produce through its collection centres to over more than 50 retails organic stores in Bengaluru.

JKS has processing and market infrastructure in the state with 6 stores in Bengaluru and aiming to have at least one Jaivik stall and establish more outlets in every city of the state in the near future. For the proper storage and quality control, an organic hub is established in Nelamangala, Bengaluru. The hub has been completely established to ensure the grading, storing and processing of goods from registered organic producers, processing plants such as oil extractor, dal refining and meal milling and so on. Organic Market Federation Bengaluru

Bengaluru Urban, Bengaluru Rural & Ramanagara District's Regional Co-operative Organic Agricultural Union LTD. Bengaluru. With the hope that regional federation of organic farmers association will help in better marketing of organic produce, department of Agriculture, Government of Karnataka has set up 15 regional federations of organic farmer's associations, having a membership of around 60,000 farmers. Each of the regional federations has about 30 to 40 Sanghas (Groups), of about 73,000 hectares of land is organic-certified area. These state-level federations are set-up in lines of Karnataka Milk Federation (KMF). This is to procure and to provide a market for organic produce across the state under a unified brand name & common logo. With this logo and branding the visibility of the organic products increases and retail organic produce sales centres will also come on the lines of KMF milk booths. Federations and the organic farmer's associations are connected to take up the collection, grading, value addition, processing, packing, brand development, marketing of organic produce,

apart from consumer awareness programme and other activities. It is also intended to eliminate the middlemen in the marketing of organic produces, thereby providing remunerative prices to organic farmers. This would improve the economic conditions of organic farmers with higher rates for their produces.

The main objectives of Regional Federations and Organic Farmers Associations are:

1. A group approach to boost bulk and quality production of organic produce. This also increases capacity building, technology transfer and handholding support to the group in the initial years.
2. To support organic producer through infrastructural facilities for collection, grading, value addition, processing, packaging of organic produce.
3. Provide direct marketing linkages to organic farmers associations with retailers, bulk marketers and exporters.
4. Publicity and consumer awareness to expand the domestic market for organic produce across the state.

Bengaluru Urban, Bengaluru Rural & Ramanagara District's Regional Co-operative Organic Agricultural Union LTD. Bengaluru, this federation was started in the year 2016, registered with thirty-one organic farmers associations and this is established with a similar plan to KMF. The group register with an amount of Rs 12,500/- under state co-operative act and managed by executive body by election (one each from taluk, totally 11 members) with one president and one vice-president & apart from that the federation is supported & managed by Agriculture, Horticulture, Vet and Agri Co-operative departments. The federation focuses on marketing of existing local productions like vegetables, millets, pulses and mangoes. Most of the vegetables are collected and sold to Sahaja Organic and other organic retail stores at the farm level, the order for the required vegetables is given a day before and it is according collected for selling. As the farmers group has their group account where the money from the buyer are deposited, in which 8 per cent is given back to farmers group, 3 per cent to coordinator and 5 per cent for federation.

Think how toxic-free

"Grinding a kilo of groundnut seeds will fetch around 400 ml of oil. A minimum of two and a quarter kilos of groundnut are required to extract a litre of groundnut oil. If, the rate for one kilo groundnut is Rs 60/-, then for a litre of oil it will Rs 250/- per litre by the time it reaches customers who buy it. Yet, a litre of groundnut oil is being sold between Rs 90-120/-. How is it possible to get 'pure groundnut oil' at such a low rate". The main focus of federation: Purity and Quality.

- CEO, Organic Marketing Federation, Bengaluru

Box strapping machine

Continuous band sealer with nitrogen

Groundnut Sheller

Roaster cum blender

Oil extractor with cold press

All in one cleaning and flouring machine

Pulses such as corn, wheat and ragi & other millets are ground into flour in the unit and hygienically packed by machines and packaged oil from oilseeds such as sunflower & groundnut and these products are processed and marketed to OMF by certified organic farmers. The unit is also involved in cleaning, drying and grading of the produce. Farmers and other members who wish to get the value-added products for themselves can use the machines available and pay only the service charges to the federation. Apart from these, the federation also exchanges the demanded food by the customers from other district federations. The main constraint faced by the unit is; mistrust of farmers on federation, poor transportation for long distance farmers, misuse of federation name by

few contractors and low financial support from the government for the maintenance & running of the unit.

All kind of organic millet, pulses and cereals

Organic eggs

Potatoes collected for grading

Storeroom section

Products sold at OMF

Processing units in the federation: Oil extraction unit (edible oils- Groundnut, coconut, mustard, sunflower & sesamum), Flour mill (food grade, wheat, ragi, jowar, Bengal gram, millets), Packing unit (Capacity 100 per hour), blending unit (Millets, pulses & grains) and nitrogen packing unit. General products and services available in the federation are registration of interested organic groups, organising training/ workshop/ demonstration to organic farmers, creating marketing facility to organic products and lab test of organic products.

2.7 Sahaja Samrudha

Started in: 2001
Director: G. Krishna Prasad & N.R Shetty

This is an organic farmer's collective movement towards preserving India's rich traditional farming system and conserving the biodiversity of indigenous crop varieties with the aim to revive and rejuvenate dying villages. Sahaja Samrudha

has begun as an entrepreneur to share ideas, seeds and information about sustainable agriculture and also to make sustainable farming a way of life for the agricultural community. The organization has spread its network through publications, workshops, training, organizing different mela marketing strategies in order to encourage more farmers towards organic farming.

Sahaja Samrudha is also engaged in faithful production of traditional seed and wants its seed to move on through generation as they are in rich in flavour, nutritional benefit and resistance to pest and diseases. This also strengthens in conserving seed diversity on-farm enhancing biological wealth and retains the germplasm within farming communities.

Objective of Sahaja Samrudha

- To promote sustainable agriculture and conduct on-farm research & standardize sustainable agricultural practices.
- Creating awareness to conserve natural resources and traditional knowledge systems and its need.
- Co-ordinate farmers, panchayat representatives, non-government organisations, government officials and policy planners on sustainable agriculture and natural resource management.
- Help in the implementation of sustainable farming techniques to farmers and grassroots organization.
- Assist farmers and other related organization in the process of converting their land into organic farms.
- To spread the information, research outcome, knowledge and thoughts related to sustainable agriculture and natural resource management by the mean of publications and other media materials.
- Co-ordinate in the procurement, marketing and sales of organically produced products.

The organization is involved in

- Save Our Rice campaign: Sahaja Samrudha with 30 other organizations has built this movement and today it includes 2000 rice-conservers and farmer-breeders from 20 districts, conserving more than 400 varieties
- Reviving millet diversity: They have a programme for the revival and promotion of millet diversity in a different district in the state. Working with other organization today they have conserved more than 68 varieties of minor and major millet diversity.
- Participatory research and development at farmer farm level.
- Sahaja Organics: 'Sahaja Samrudha Organic Producers Company Ltd', linking producer and consumers is first of its kind in the states that help farmers to exhibit and sell their products with good quality and price benefiting both the farmer and consumers. The produce is directly procured from the farmers and Sahaja Organics to its network outlet, directly reaching the farmers.

The company has created an organic produce outlet network in different areas of Bengaluru, Shimoga, Mysore, Davanagere, Tumkuru, Channapatna and Dharwad, Karnataka. It has increased the outlet's capabilities through planned strategies of procurement, marketing, quality maintenance, eco-friendly packaging, distribution and most importantly clientele management.

- Save Hallikar: Sahaja Samrudha supports the communities to maintain the local animal genetic resources with great care.
- Sahaja Seeds: 'Desi Seed Producers Company Ltd', registered under Company Act 1956 and it is groups of organic seed producers & seed savers to conserve and promote landraces. These seeds are marketed under the brand name 'Sahaja Seeds' which are high in quality, organically grown, traditional, open-pollinated vegetables & cereal crops seeds

2.8 Organic Karnataka Farmers Association (OKFA)

The Organic Karnataka Farmers Association (OKFA), as an NGO registered in November 2018 under Karnataka Societies Act 1960, is mainly engaged in organic agriculture and in the promotion and distribution of fresh millet, grain and fruit, vegetable and homemade goods in order to support the organic, renewable and integral systems and sustainable agricultural systems of organic farming.

OKFA was started for the welfare of the interested and progressive organic farming community in Karnataka. OKFA is looking for its promoters who can take the initiatives for OKFA to its reach greatest heights in the next 5 to 7 years. They are presently engaged in providing organic farming production techniques, farm planning, budgeting and farm resource management, organic inputs, organic certification-NPOP, NOP, PGS and its marketing linkage, agriculture project planning, resource mapping and executing.

ONICA Project

OKFA has started a project called ONICA (Organic, Natural, Integrated, and Co-operative Agriculture) during December 2018. The project is supporting the adoption of organic, natural, integrated and co-operative agriculture production models for the benefits of the soils, water and environment, bio-diversity, the farming community and health-conscious consumers. It also works towards authorising interested, progressive and small farmers. Farmer groups, small scale traders and processors, agro and allied enterprises and etc.

An important focus is given to provide their associated members with proper health, medical check-ups, village sanitation, and children education. Farming communities are trained on organic and natural farming methods, given hand-on experience for the adoption of less expensive and effective farming methods, thought marketing techniques for grabbing good price for their products through value addition processing, organic certification and marketing support on a co-operative and holistic approach in Karnataka.

The project is continuously working on the new models, methods and techniques to bring sustainable socio-economic changes, increasing the earning power and profits to those in association with ONICA project. Not only farmer member it is also designed to benefit the associated stakeholders. Associating with the project is an annual commitment, involvement, dedication & learning with experience will increase the profit and standard of living.

The project is joined by filling the application with a fee of Rs 501/- to OKFA address, after joining separate Id will be provided to the member. A separate business profile will be developed and circulated both online and offline, this will promote and expand the member's presence and increase the volume of sale and profit. The member needs to renew membership annually if the member is satisfied with the project's efforts in a year of association.

Mission of ONICA

ONICA project mission is to motivate their associated farmers to adopt organic, natural and integrated farming methods and technologies based on the demands of the organic, natural and health-conscious consumers. This is achieved in accordance with the conservation of soil quality and increased crop production. This promotes the business and self-employment of agriculture and seeks various consumer relations for better prices.

Outcomes of the ONICA Project

- Direct processing activities and marketing on a cooperative model are taken up by farmers.
- A threefold increase in the farmer's income by avoiding the middlemen.
- Farmers are debt–free.
- Reduced farmers unnecessary farm expenses.
- Urban consumers are getting safe, fresh and trustworthy chemical-free foods.
- Employment opportunities among small farmers in rural villages.
- Better education to the children and improved living standards.
- Farm women have empowered and actively involving them in this project.
- Improvement in sanitation and other basic rural infrastructure in selected project areas.
- Part of the profit will be set aside for the scholarships and providing a monthly supporting fund to the elders in the member farmer groups.


Encouraging and helping farmers in organic farming and processing


Encouraging and helping organic input

2.9 Akshayakalpa (Rejuvenating Indian Agriculture)

Founded in: 2010 by Dr GNS Reddy (Founder) and Shashi Kumar (Co-founder).

Industry: Organic Milk & Milk Products with current average procurement of 25000 litres per day

Vision: Aspire both Farmer & Consumers with model "Win-Win-Win" here the three win's represents Farmers-Company-Consumers,
Empower farmers to take care of themselves, along with their cows, soil & environment

Objective: Rejuvenate Indian Agriculture by providing unlimited possibilities to our farmers and our children

Mission: Transform Agriculture by setting up sustainble and farmer-owned organic dairy farms to bring back good old healthly & tasty milk

Average monthly Income of company: Rs 17,50,000

Number of farmers engaged with them: 250

Average revenue earned by an Akshayakalpa farmer: 82000 per month

Akshayakalpa is the first organic milk brand in India, i.e, milk products raised and made according to the method of organic farming where livestock are gazed, fed on organically certified fodder/feed and not treated with most drugs. They manufacture, market and sell organic milk and their products (the products include farm-fresh milk, A2 milk, curd, ghee, butter, paneer and artisan cheese) under the brand "Akshayakalpa".

The genesis for the start of Akshayakalapa: Dr GNS Reddy (Vet) from Bharatiya Agro Industries Foundation conducted Youva Chetna Program, he encouraged likeminded urban area people to contribute kind and cash to train in need youth and women of rural areas to take up farming as a choice during vacation. This idea by nine techies and co-founder (Wipro technology) was transformed into the idea of rural entrepreneurship model under "Akshayakalpa" during 2010. It is totally a farmer entrepreneurship initiative, the idea was to identify young farmers who discontinued farming due to economics non-viability and groom them up back to farming by providing bank linkages, outreach, technical service and access to the market. This has established in an economic manner by defying corruption at every stage.

Akshayakalpa holds and encourages farmers on a continuous basis, ensuring economic viability in farming operations and its main aspiration is to help farm family to earn a net monthly income of Rs. 1,00,000. This company is working with farmers in and around Tiptur, Arsikere, Chanarayapatna, Chikkanayakanahalli, Kadur and Holenarasipura, Karnataka and preparing them entrepreneurs by changing the way of their farming operations to wealth creation to livelihood focus.

Akshayakalpa works with farmers to set-up small organic dairy, which is owned and taken care by farm families and these farms are optimally mechanized and self-sustained. Akshayakalpa has strict rules and guidelines regarding the maintenance of farms and cattle. Accordingly, the cows are fed with chemical-free input grown green fodder, harmones are not injected and oil cakes are fed to increase the milk production.

A farmer needs to take about 18 months to induct into Akshayakalpa model, beginning with production of organic fodder. Every farm needs to be invested Rs 21 lakh, which is financed by Akshayakalpa partner bank and this money is used up for building the farms. The farms are made of; 25 cows, automatic milking system, biogas plant, bio-digester, fodder chopper and chilling unit along with other facilities that enhance productivity integratedly and profitability. This kind of ideal farm size has been developed after long research by Akshayakalpa, the farmers linked with Akshayakalpa have the same design in common.

The design is airy, steel-roofed shed, rubber Matson the cemented flours for animal comfort and the cow and calf are stall-fed (ensuring clean and stress free housing and organic grass-based diet, but not tethered where the cow is free to graze and regular veterinary check-ups for the animals so that cows can produce milk that is antibiotic and harmone free. Totally the dairying method is designed in such a way it takes out drudgery. The main focus is on cleanliness, the dung has to be punctually cleared. Here dung is flushed into to the digester i.e, attached to balloons of biogas, which is used for the purpose of cleaning, cooking and electricity generation (produces power that can be used 8 hours a day) and here the power is enough to run irrigation pump-set and other machinery of the farm. The slurry is pumped to the field from the digester for healthy crop growth.

Milking is done with automatized milking machines and chilled immediately at the site. Farm level chilling the milk at 4-degree Celsius and analysis is mandatory to ensure the quality, only when the quality is ensured the milk is into its next stage and due to this automation system manual labour is reduced. Here the farmers are taught farming with closed-loop soil health management and drudgery free operations. This stay helps women who are engaged in both household chore with farming and also attract youth to stay in farming.

Akshayakalpa also has an integrated research and development part at plant, currently working on:

- Women empowerment to achieve their highest potential from farm to processing plant. As Akshayakalpa believes women are the key contributors to their success and also found women are better managers too.
- Use of cloud-based technology to track and store data from all linked farms. All the test done at a farm level are uploaded to the cloud immediately, which helps them to create and monitor the highest quality control procedures.
- Farmer model "Not Subsidies but follow technologies."
- Better soil management for producing a better crop. The sustainable farming practices has yielded more coconut per palm tree which helps farm in generating high income.
- Constant research to keep cows (local breed) healthy and productive and making it reach the farmers through their extension system.
- Research on the development of perfect TMR (Total Mix Ratio).
- Constant working on how to reduce the cost of cultivation with proper management.
- Teaching through example, by picking one farmer per village as a role model to inspire others to succeed.
- Working on home gardening for rural farmers along with Akshayakalpa dairying model, which can help them to earn an additional source of income.
- Purity through technology.
- Tour to consumers at plant and farm to know how pure and healthy their milk and imparting them the facts about milk. Teaching consumers "Pay the farmer now or pay the doctor later."
- Local workshops for both the farmer and consumers.


Training to Farmers and Staff (R&D)




Milking, chilling, Heifer Research and Development Section


Fodder production, TMR, Silage Research and Development section

Home Gardening Vegetable Research & Development Section

How Akshayakalpa is associated with their farmers

1. Building the farmers from gross-root level.
2. Training the farmers: Training is for a period of 3 months (Every Saturday) with a fee of Rs 150 per head and provided with the training materials.
3. Making the farmers join and form a grid for a good network, the farmer with a chilling system providing support to other farmers are provided an incentive of Rs 1.50 per litre.
4. Input materials are provided to the farmers like seed, shoot and TMR at nominal prices.
5. Regular mechanical service for farm machines and cattle health, service are provided at the farm gate with no charge of a farmer, only charge for the material when needed.
6. Milking through automatic milking machine.
7. Milk testing at the point production, approving it when the quality found is perfect. This procedure makes the farmer follow the perfect path for his betterment.
8. The base price of Rs 30/litre is paid to farmers, an incentive is given according to the proper SNF and fat.
9. There is no risk and charge of transportation to the farmers as the milk is procured at the farm gate.
10. One extension worker from the company is provided for 5-8 farmers in assisting every stage from seed, technology, logistic, and many more. There is no charge collected from farmers for this extension service.
11. Teaching farmer Cost of Production and labour management.
12. Knowledge imparting on Total Mix Ratio, sillage preparation and developing the concept of one-time feed.

Table 2.9.1: The training format

Particulars	I	II	III	IV
	Training Content			
Practical	• Clean Milk production • Bulk Milk Chiller reception and Quality check • Hygiene • Feeding and Watering	• Clean Milk production • Bulk Milk Chiller reception and Quality check • Hygiene • Feeding and Watering	• Clean Milk production • Bulk Milk Chiller reception and Quality check • Hygiene • Feeding and Watering	• Clean Milk production • Bulk Milk Chiller reception and Quality check • Hygiene • Feeding and Watering
Theory Awareness	Farm Management	• Animal health & happiness • Free Stalling • Animal Grooming & De-horning • Worming & Vaccination	• Silage preparation • TMR preparation	• Organic Farming • Manure/ vermicompost production
Theory	• Equipment usage • Infrastructure and service (Knowledge)	• Calf rearing/ heifer rearing • Ethnovet practice	• Cost of production Its Advantages and Economy etc	• Fodder Production
Question & Answer		**Interaction section**		
Practical	• Farm Management • Equipment Maintenance	• Deworming • Free stalling	• Silage preparation • TMR preparation	• Dung Management • Power Production

2.10 Garden City Farmers

This concept of "Garden City Farmers" was developed by Dr. B.N. Vishwanath (a doctoral degree in Agriculture Sciences and served as a Professor at the University of Agricultural Science, Bengaluru). With the dream of "Farming in city". Bengaluru known as Garden City was losing its garden greenery and also saw that neighbours who had a garden in their space were helpless due to more urbanization impact. In the year 1995, he developed his terrace garden and conducted workshops to spread awareness among the people about its need for a healthy and safe environment. But this initiative was not encouraged, but he continued to develop.

"By growing vegetables, we not only improve our health but also render the environment healthy. Proper waste management, re-use of bio-waste in the form of compost and re-use of water are major aspects of kitchen garden maintenance. By growing food locally, we lessen the burden on mother earth by decreasing our carbon footprint".

"Plants grow by themselves but proper attention and a little management are required. Most of the vegetables necessary for a family can be grown on the terrace of a house built on a 30x40 site".

-Dr. Vishwanath

Objectives of Garden City Farmers

- To protect the environment, to increase the greenery and health of the public by spreading social awareness on organic farming/gardening.
- To conduct workshops, training and events for the interested group of people on urban farming/ terrace gardening.
- To introduce awareness campaigns to foster the need for organic food and for the means to attain organic food by terrace planting in schools, universities, businesses and the other likely institutions.
- To establish operational ways to promote urban farming systems by working in tandem with other local agencies, Government departments.
- To conduct research and development projects aiming to preserve the environment, with sustainable living, reduce carbon food prints and access to safe and functional food with community participation.
- Aiming to create a better world for future generations.

The concept crystallized into a campaign in 2005 with the involvement of youth and media, this aroused public interest. Presently, every month around thirty people receive basic information and training on terrace gardening at A.M.E Foundation in Banashankari, Bengaluru and for this purpose at the foundation, Dr. Vishwanath has created a model of the terrace garden. Youth at the campaign also spreading the advantage of 'expenditure-income' formula by having terrace gardening.

As the awareness and network expanded, there was a discussion on organic manuring, bio-compost, seed exchange, bio-pest repellent and also water management for the garden. To meet these requirements, the organization started a programme/event called "Oota from Your Thota". This programme is conducted once in three months in different parts of the city which bring together different environment-friendly incentive to the interested public.

Oota from Your Thota (OFYT)

Oota from your Thota (Food from your Garden), a one-day event organized to promote gardening among urban dwellers. Also to make all organic terrace gardening and urban farming necessities available in one place along with know-how. The event exposes the urbanites to different enterprises related to organic urban farming.

This programme also shares the problems faced and finds the solution to it. According to various age groups, enticing events are scheduled, such as quizzing and drawing competition for the children on the topics related to kitchen gardening or terrace gardening and gifting sampling to children to spread the appeal and concept of greenery to them. The programme as a Facebook page "Oota From Your Thota", followed by more than 8,000 people. Facebook is a good platform to share activities in the management of the healthy garden and also serves for the interaction & problem solving among the members.

Among all the concern water management was major and using fresh & 1st hand water is difficult in Bengaluru. This concern was suggested with the use of greywater (Greywater; used water in case of household operations like cleaning utensil, floor, bathing, etc.) for the growing crops in the terrace. Other countries also use black water (toilet water) but we don't have the culture and tradition of using it, so it was suggested, best to use the greywater for crop management. As most of the people use chemicals in their daily use when we use this water to crop then, how is it called chemical-free food? This offered a means for the Biological Research Innovation Centre & Solutions LLP to foster green lifestyles. This was developed with the goal of using bio-based innovations to create renewable and healthy technologies. Their broad vision is to "Rethink to Rebuilt" the environment & ecosystem. Their mission is to promote save food production through the principle of natural farming and develop chemical-free innovative products (Natural Fabric Wash, Dish wash, Toilet Wash and Surface Wash and etc.,) accordingly. These products are chemical-free, made with natural ingredients, easy to use, low lather formulation, completely biodegradable, and well suited to modern & green lifestyle for better crop production, better health & society wellbeing.

Terrace farming has many advantages

- Promoting the green lifestyle among the urbanites.
- Disproved the myth that rooftop gardening weakens the terrace, whereas this cools the house.
- Chemical-free food and chemical-free vegetables grown at home reduce the carbon footprint, which is the main cause of global warming.
- Kitchen waste management, composting the kitchen waste reduces the need for water as kitchen waste has enough moisture in it and it also helps in water management.
- Rainwater harvesting and water recycling for the judicious use of water.
- Therapy to free stress and family time reduces the need for external inputs.

- Healthy and toxin-free food for the family and reduces the expenses on vegetables.

There recent 33rd event of "Oota From Your Thota" was completed on 21st & 22nd December at Village Story, Jakkur, North Bengaluru, Karnataka to promote organic terrace gardening. The event had an action package of organic and green lifestyle exhibitors, promoters, products and processors along with their stalls to educate children, urbanites and visitors.

2.11 My Dream Garden

MY DREAM GARDEN
URBAN FARMING
Let's Grow Together
Practical | Integrated | Sustainable | Balanced

Founder & CEO: Mr. Ashok Kumar K. C
Founded in: 2012
Average annual turnover: 6 crore

My Dream Garden, a leading urban organic farming company in Bengaluru facilitating and guiding people to grow their healthy foods on the terrace, balcony & empty land. Creating awareness about nature & gardening and the company has the best quality, unique potty mix and less maintenance

Vision: To help and protect people in the field of gardening by providing required knowledge to excel and to provide employment for their betterment.

Mission

- Help underprivileged people and student from a different educational background, train them to become expert the gardening field and employ with the required skill.
- Helping people to develop & understand the importance of gardening in the modern world.
- To promote eco-friendly and organic vegetables and a small requirement for the home, to reduce the chemical effect on health & environment.
- To create awareness and training programmes on organic terrace gardening.
- To teach easy ways of gardening, involving children and elders to develop their interest in gardening and help everyone in managing the garbage at home.

The company's efforts to help for happy gardening

- Introduced different sizes of long-lasting containers for potting media, called grow bags for easy handling and grow plants in it as Bengaluru urbanites have no required land space.
- They conduct workshops, share knowledge on gardening and different process for good crop production.
- Help in the establishment of a comfortable garden with low investment inputs and easy access materials.
- Teach gardening in-home waste management to convert into compost and good water management practices.
- Support by different accessories to create a perfect environment for growing plants.

My Dream Garden organizes workshops regularly to inspire, teach and get into the world of organic gardening.

The topics covered in the workshop

Achievements

Conducted more than 900 training workshops in Bangalore and across Karnataka. Educated more than 65000 people, shared knowledge in simple ways of gardening. More than 15000 people started their new gardens and more than 3000 gardens are created by the company team. More than 6000

people have started to convert their kitchen waste into compost and around 65 lakh kg of waste is being converted into compost, instead of garbage. My Dream Garden is a part of taking training sessions in Horticulture Department, Karnataka and Lalbagh Training Centre.

The company's plan is to set up Green City Training Confederation, offer integrated urban farming courses blend of theory and practice for better health of both people & environment, Swachh Bharat mission, skill development and employment generation in this field. The features of the training are to cover the best way of urban farming with the concept of minimum space-maximum yield through organic practices, teach easy and simple way of gardening methods with fun & play, exploring model garden through field visits, experience the skill & techniques in crop production from soil preparation to harvesting and teaching cost-effective methods & role of recycling, reuse and reduce.




Model Organic Terrace Garden at head Quarter, My Dream Garden

2.12 Village Story

Founder: Anamika Bist, founded in 15th Aug 2017

An innovative idea of Community Organic Garden with other workshops, fun activities & events. The place offers 7×7 m plots for people on rent (Rs 2000 per month with minimum subscription of 3 months) to grow and maintain organic garden, where they can grow fresh & healthy leafy vegetables for

their home need along with enjoying the fun of farming. The staffs at Village Story take care of crops at garden in the absence of the people (who own on rent).

Community Organic Garden

Section 3: To identify and analysis the organic farmers perception towards organic farming and organic certification, Bengaluru, Karnataka

This target addresses the views of organic farmers in Nelamanagala & Yelahanka taluk, Bengaluru, Karnataka for organic farming and organic certified farmers. The research helped to include the basic context on the understanding and qualification of organic farming and also outlined the recommendation for change from the respondent side. For a better understanding of the results, it has been presented in table and figures. Each table and figure gives detailed information on the study results and presents an analytical view. Results and discussion have been presented below:

(Sample size: 60 organic farmers were selected by simple random sampling & snowball techniques for the study, primary data has been collected through a structured questionnaire, face to face interview and personal observation).

Table 3.1: General status of the respondent sample farmers

	Variables		No. of Respondents (out of 60)	Percentage (100)
1.	Age	21-30	06	10.00
		31-40	13	21.67
		41-50	24	40.00
		51 and above	17	28.33
2.	Gender	Male	49	81.67
		Female	11	18.33

3.	Educational Status	Illiterate	05	08.33
		Primary	13	21.67
		Higher Secondary	16	26.67
		Graduation	11	18.33
		Post-Graduation & above	03	05.00
		Others	12	20.00
4.	Family Size	1-5	33	55.00
		6-10	18	30.00
		>11	09	15.00
5.	Occupation of Farmer	Only farming	29	48.33
		Farming & Subsidiary	21	35.00
		Others	10	16.67

Table 3.1 presents the basic information of study sample respondents. The table reveals, out of 60 farmers:

1. 10 percent (06) are under the age group 21 to 30, 21.67 percent (13) are under the age group 31 to 40, 40 percent (24) under the age group 41 to 50 and 28.33 percent (17) are above the age of 51. This is shows, farmers among the age group of 41 to 50 are more involved in organic farming.
2. Among the 60 organic farmers, 81.67 percent (49) were male farmer respondents and 18.33 percent (11) were female respondents. This shows male farmers are more involved in organic farming in the study area.
3. Out of 60 farmers 08.33 percent (05) of farmers are illiterate, 21.67 percent (13) farmers had primary education, 26.67 percent (16) of farmers had higher secondary education, 18.33 percent (11) of farmers are graduates, 05.00 per cent (03) has the education of post-graduation & above and 20.00 percent (12) has other educational qualifications like a diploma, vocational course, etc., this indicates more primary, higher secondary level educated farmers are involved in organic farming.
4. Out of 60 respondent farmers, 55.00 per cent (33) farmers had a family size of 1 to 5, 30.00 per cent (18) farmers had a family size of 6 to 10 and 15.00 per cent (09) farmers had a family size of greater than 11. The table predicts that the farmer having a family size 1 to 5 has mostly adopted organic farming.
5. Among the 60 respondent farmers, 48.33 per cent (29) farmers are practicing on only farming, 35.00 per cent (35) are involved in both farming and allied (farm labour, poultry, apiculture, animal husbandry, sericulture, etc.,) and 16.67 (10) are doing farming along with different kinds of jobs in rural & urban areas. This depicts all are not fully engaged in organic farming.

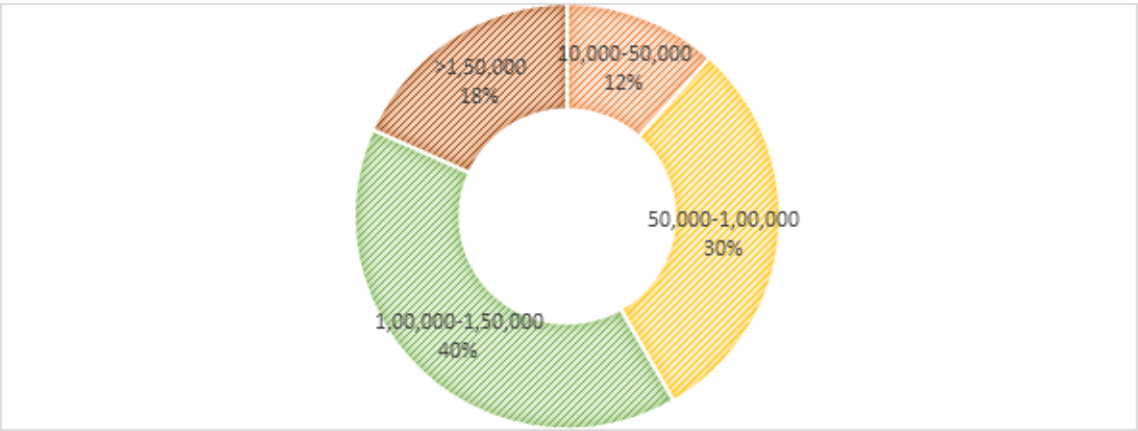


Figure 3.1: Annual income of farmers in the study

The income per annum of the farmers has been depicted in figure 3.1. It can be clearly seen that only 18 percent of the respondent farmers are earning more than Rs. 1,50,000 per annum and 40 percent of farmers are earning on average of 1,00,000 to 1,50,000. This indicates more than 50 percent of respondents in the study area earn more than 1, 00,000 per annum.

The difference in the earning is due to the land area, type of crop grown and subsidiary occupation followed by the farmers. Also, there is a need to increase the farmers' income with better organic practices & better marketing of their products, which can lead to their better standard of living.

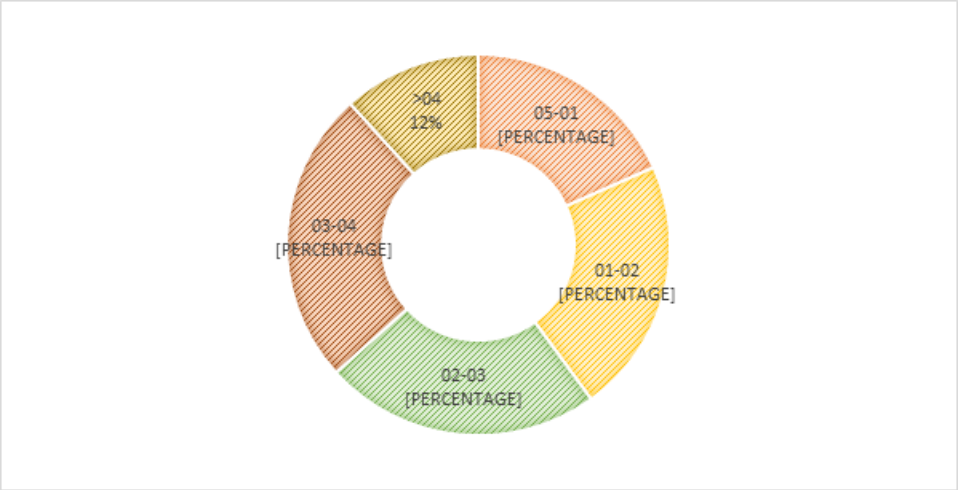


Figure 3.2: Area/land holding under organic cultivation by the study respondents

Landholding/acre under organic cultivation plays an important factor in adopting organic farming in the study area. Figure 3.2 indication acres of land under organic cultivation by the respondents, it clearly shows that most of the farmers fall under small and marginal land holding category.
More than 60 percent of farmers have 01 to 04 acres of land holding under organic cultivation. Also, only 12 percent of the respondents own more 04 acres of land and under organic cultivation. There a need to encourage big farmers to involve in organic farming in the study area.

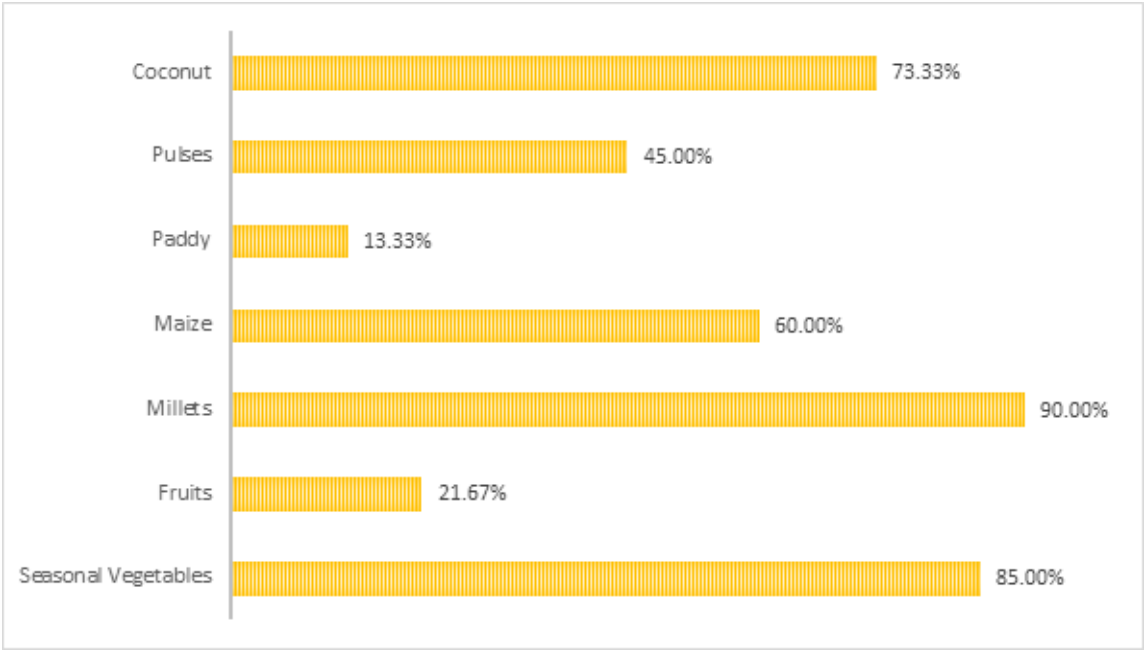


Figure 3.3: Crops grown under organic cultivation by the respondents

The different crops grown by the respondents are presented in figure 3.3. The major crop grown is millet (90 percent), mainly finger millets are grown as they are drought, disease & pest resistance crop with less intercultural operational requirement and also the crop are grown for the family consumption. Farmers are engaged in growing seasonal vegetables (85 percent), as they give good yields and earning in short duration. Farmers grew coconut trees (73.33 percent) in small number mainly for home consumption. Apart from that they also cultivate pulses (45 percent), maize (60 percent) and fruits like guava, mango, grapes and papaya (21.6 percent). It can be clearly seen that only 13.33 percent of the respondents cultivate organic paddy in the study area, mainly for the purpose of self-consumption and low cultivation is due to high water requirement. This also shows respondents are not only cultivating also consuming the organic food which they grew.

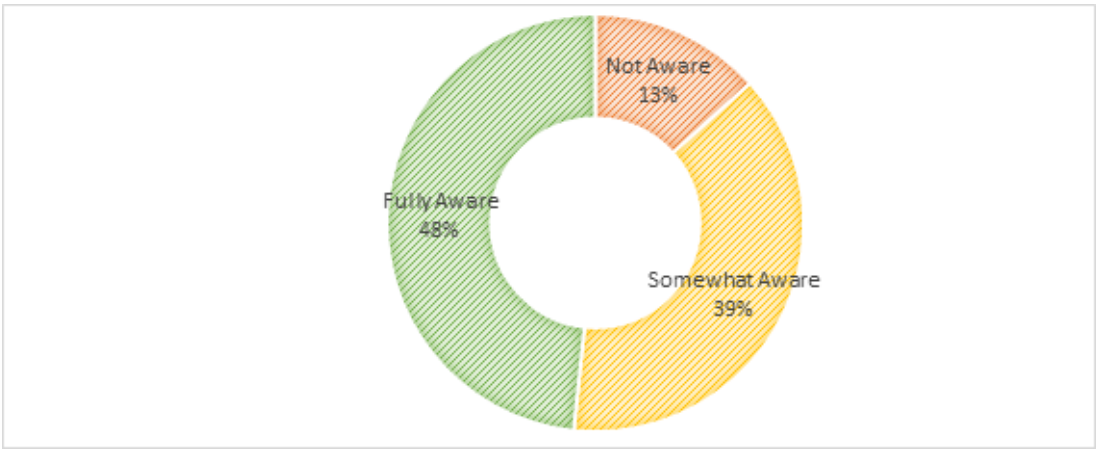


Figure 3.4: Respondents awareness on organic farming

The awareness of organic farming among the respondents has been presented in figure 3.4. The figure shows more than 80 percent of the farmers are aware of organic farming and know its benefits to the environment and soil. 48 per cent are fully aware, 39 percent are somewhat aware and learning

the practice of organic farming, respectively. 13 percent of the respondents are not aware and blindly doing organic farming, this show there is a need to educate the farmers properly on the practices and benefits of organic farmers.

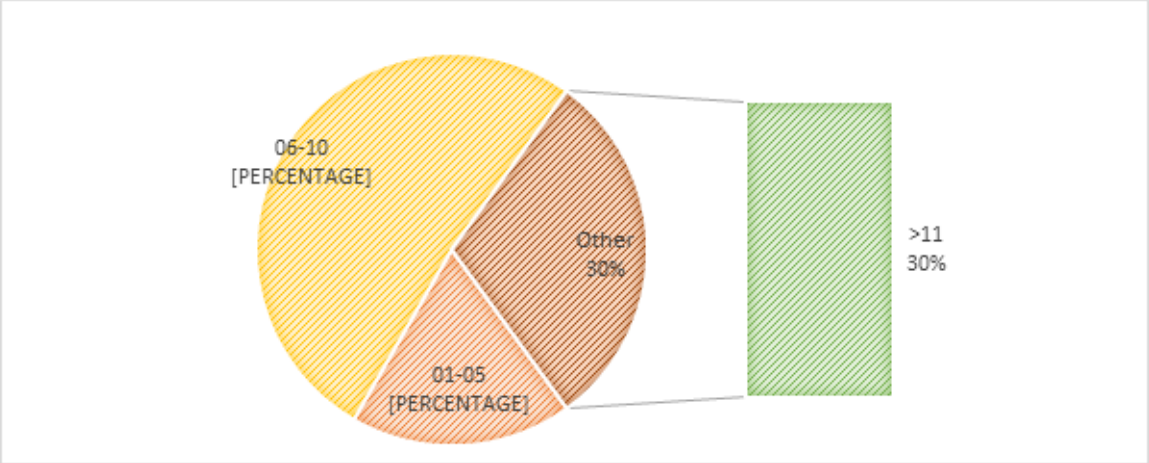


Figure 3.5: Number of years respondents are practicing organic farming

It has been clearly shown in figure 3.5 that, since more than 5 years the respondents (80 percent) are practicing organic farming in the study area. Among than 52 percent are practicing organic farming since 06 to 10 years and 30 percent are practicing organic farming since more than 10 years, respectively. About 18 percent are practicing since 01 to 05 year and most of them are under conversion. During the survey, it was also found that people left organic farming and shifted to conventional farming and then again shifted to organic farming due to instability in production and productivity and the reason behind this was the external agencies and external inputs used in farming.

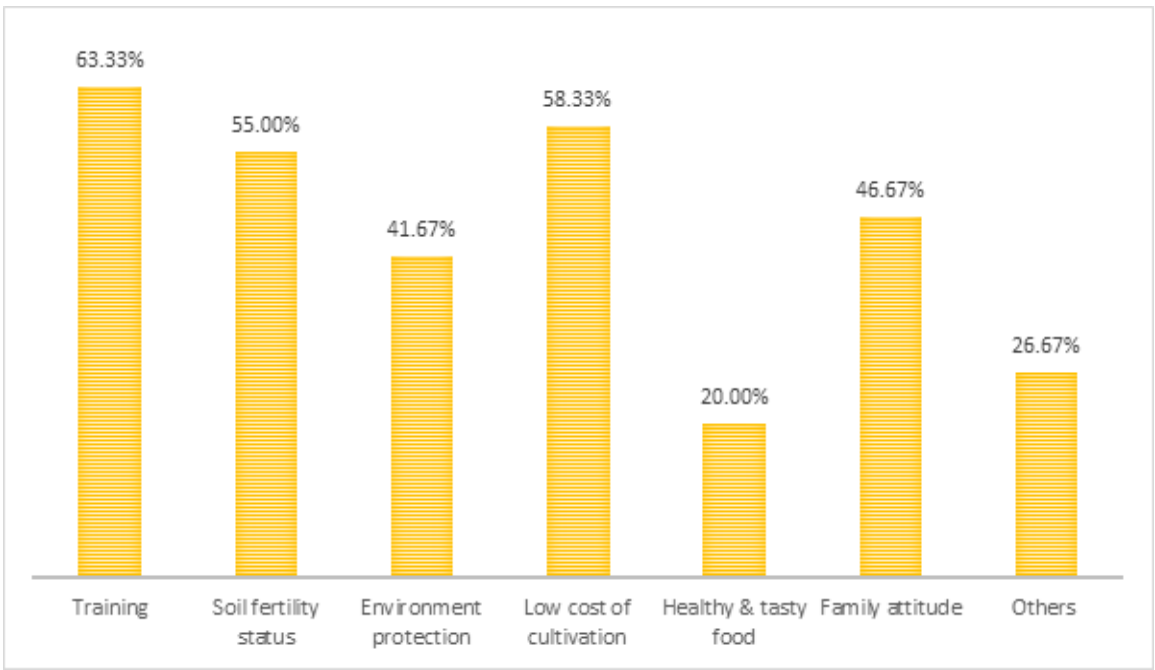


Figure 3.6: Reason for practicing organic farming among the respondents

The reasons for adopting organic farming among the respondent farmers have been depicted in figure 3.6. Majority of the respondents have adopted organic farming after getting influenced by training (63.33 percent) from Government agencies and NGOs. Most important, 58.33 percent have found that the cost of cultivation involved in organic farming is low as compared to conventional farming and this can also be a reason where respondents are not able to afford costly inputs in conventional farming.

Respondents also have a responsibility to the soil fertility status; this has made 55.00 percent of respondents shift to organic farming. Also, 20 percent of the respondents are willing to produce healthy and tasty food quantity for them and society. Further, other reasons for shifting organic farming are for the protection of the environment (41.67 percent) and family attitude to practice organic farming (46.67). And a few other reasons like influence from other farmers & agencies, near to market society and low input use, etc.

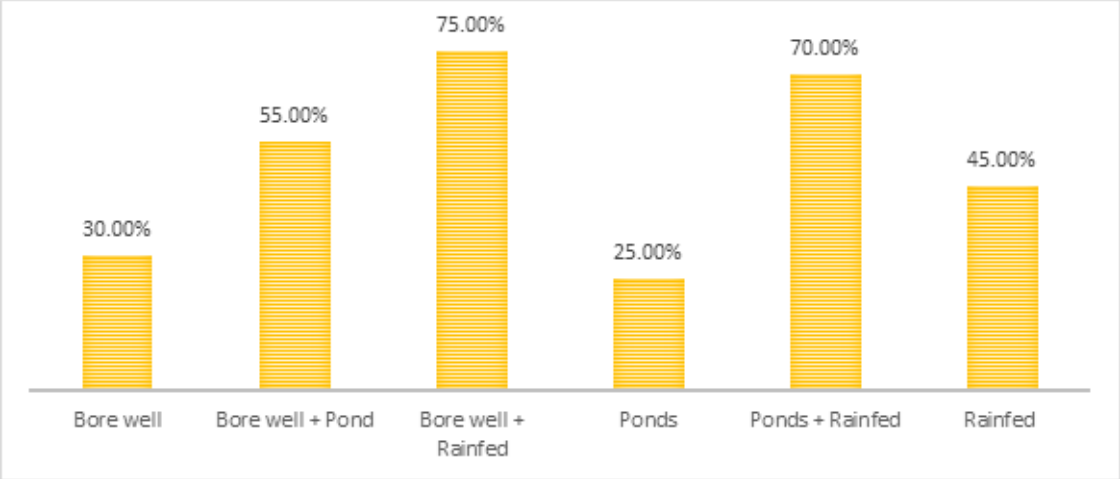


Figure 3.7: Source of irrigation used in organic farming by the respondents

Figure 3.7 reveals the source of irrigation used by the respondent in organic farming. This shows the major source of irrigation used by respondents is a combination of bore well and rainfall (75.00 per cent) and it is followed by the combination of ponds and rainfall (70.00 per cent), and combination of bore well and pond (55.00 per cent). Respondents use different sources of irrigation in combination this show they face the irrigation problems in the study area and there is a requirement in the proper management of irrigation source.

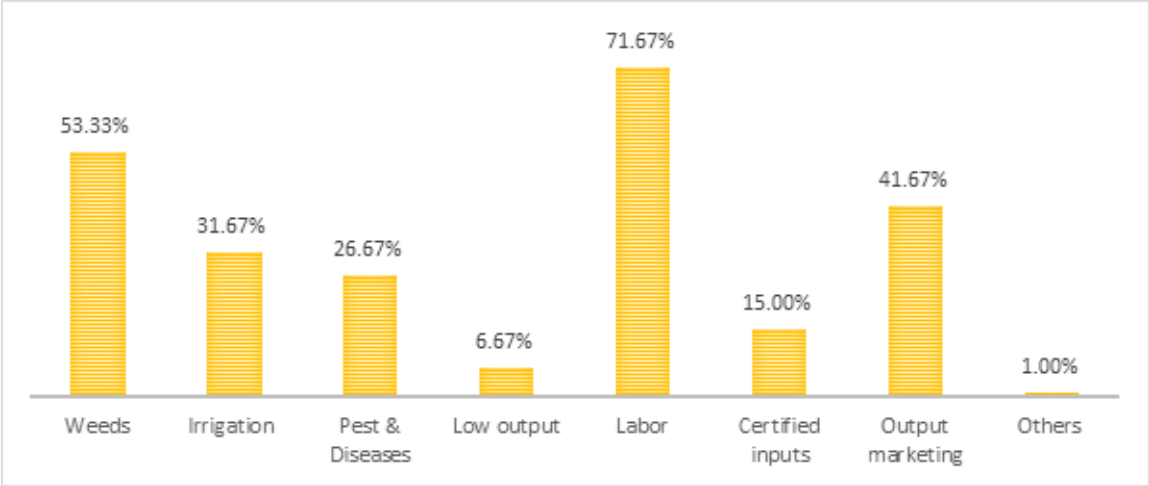


Figure 3.8 Problem faced by the respondents in the process of organic farming

The most common problem faced by the respondents is the problem of low availability of labour (71.67 percent) followed by the weed growth (53.33 percent) and marketing for the produce (41.67 percent). This shows there is a need to develop new & improved methods for labour management, with better & new weed management practices and also need an organized market with fair practices for organic produce.

Figure 3.8 also shows, the respondents face irrigation problem (53.33 percent) more during a dry spell, followed by 26.67 per cent of felt the problem of pest & diseases and this shows there is a need to develop more improved methods for water and pest & disease management for the benefit of farmers. Few respondents have reported the problem of low output (6.67 percent) and other problems like improper sowing time, financial management, produce transport and climate change.

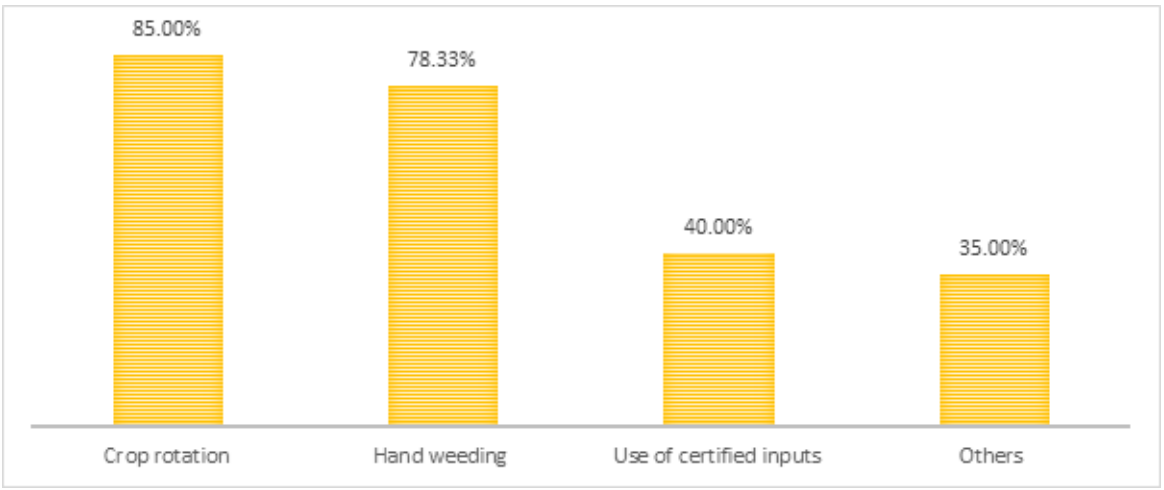


Figure 3.9: Basic remedial measures taken by respondents to solve some of the problem

Basic remedial measures followed by farmers to solve some of their problem faced in organic farming are shown in figure 3.9. Respondents follow crop rotation (85.00 percent) as it so natural during the practice of cultivating seasonal vegetable and other millets as major crop and this also helps in

the management of water in long term farming. The problem over the weed is managed by hand weeding (78.33 percent) as no chemical is been used in organic farming.

Use of certified input (40.00 percent) followed by respondents to manage pest & disease problem and avoid crop failure. The other methods (35.00 percent) followed to solve their farming problem in production & using their own farm input at the farm, approaching agricultural development for better farming advices and regular interacting within organic farming committees.

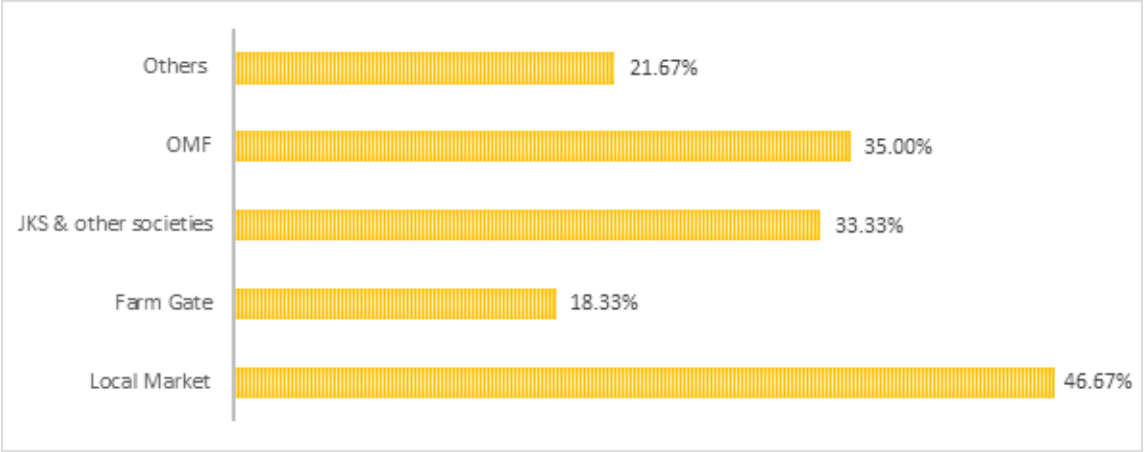


Figure 3.10: Organic produce sold by respondent at different market place

Figure 3.10 shows the details of different places where the respondents sell their organic produce. Respondents near to Nelamangala taluk face few problems with the direct market as they are near to OMF & JKS warehouse and organic societies compared to respondents near to Yelahanka taluk and this also shows the problem of produce transport to connect OMF & JKS warehouse.

Majority of the respondents sell their produce to the local market (46.67 percent) where they fetch the same price as of conventional products. Very low percent of the produce is sold at the farm gate (18.33 percent), i.e. organic retail stores buy from farmers on contract and pre-order bases. Marketing through OMF & JKS and other farmer organized market accounts 68.33 percent and in these places also selling is based on pre-order and demand bases. And others means of selling are direct contracting with companies, stores, event and hotels based on the required ordered quantities. This summarizes the need for a better organized market for organic products by organic farming.

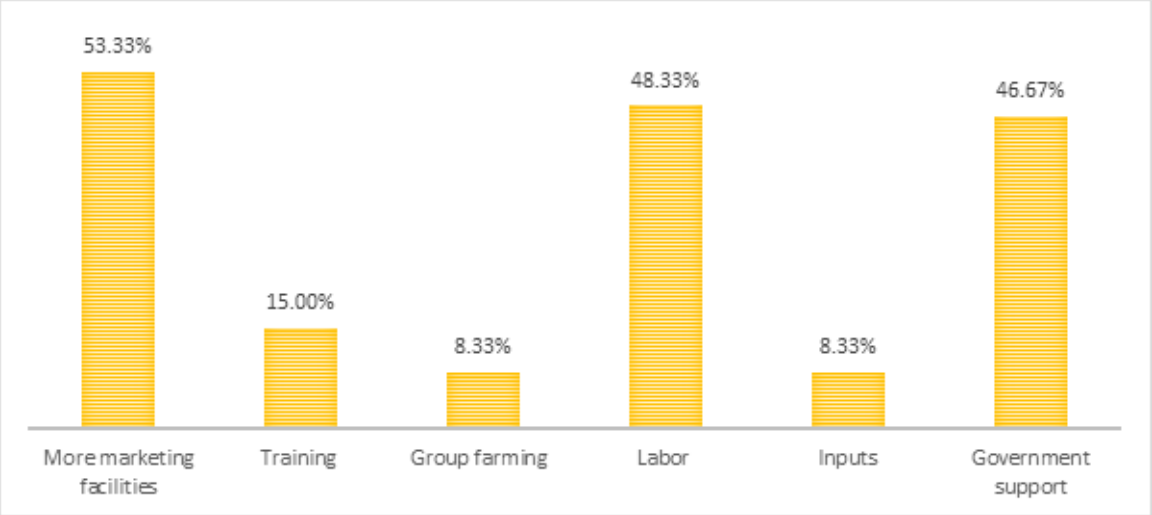


Figure 3.11: Suggestion given by respondents for better organic farming

The suggestions given by respondents during the study have been depicted in figure 3.11. Respondents suggested the need for more marketing facilities (53.33 percent) so that their produce gets more value for crops and returns for their investment. Followed by respondents, suggested (48.33 percent) labour management by better forming labour group at villages with specific standard labour wages. They also proposed increased government funding and legislation (46.67 percent) before respondents and their farms have established themselves. Still, others indicated that there should be sufficient teaching (15%) on methods improved along with certified inputs (8.33%) in organic agriculture and few suggested Community farming (8.33).

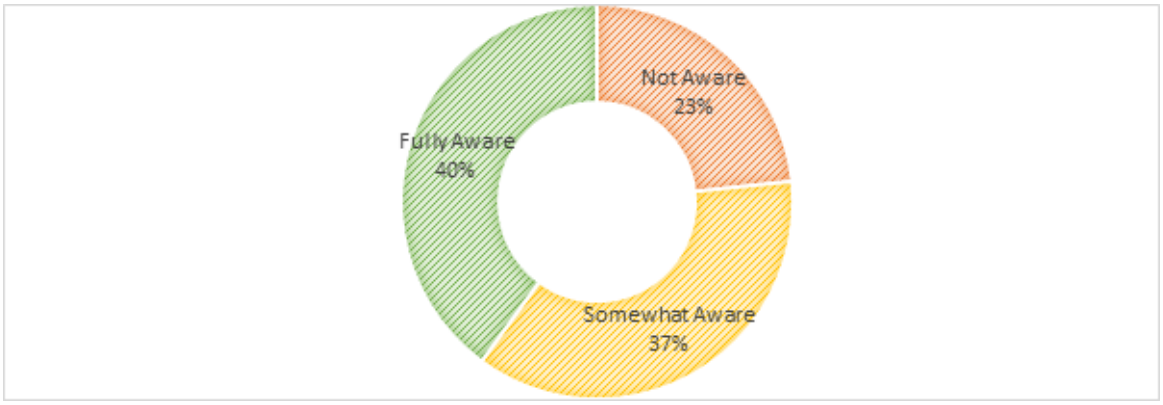


Figure 3.12: Respondents' awareness on organic certification

The data on respondents' awareness on organic certification has been depicted in Figure 3.12, it clearly shows 77 percent are aware with the concept of organic certification and among them, 40 percent are fully aware and 37 percent are somewhat aware, respectively. And, 23 percent of farmers are not aware of the concept of organic certification. This shows that there is a need for better education among the farmers on organic certification and its need, so that every farmer follows genuinely.

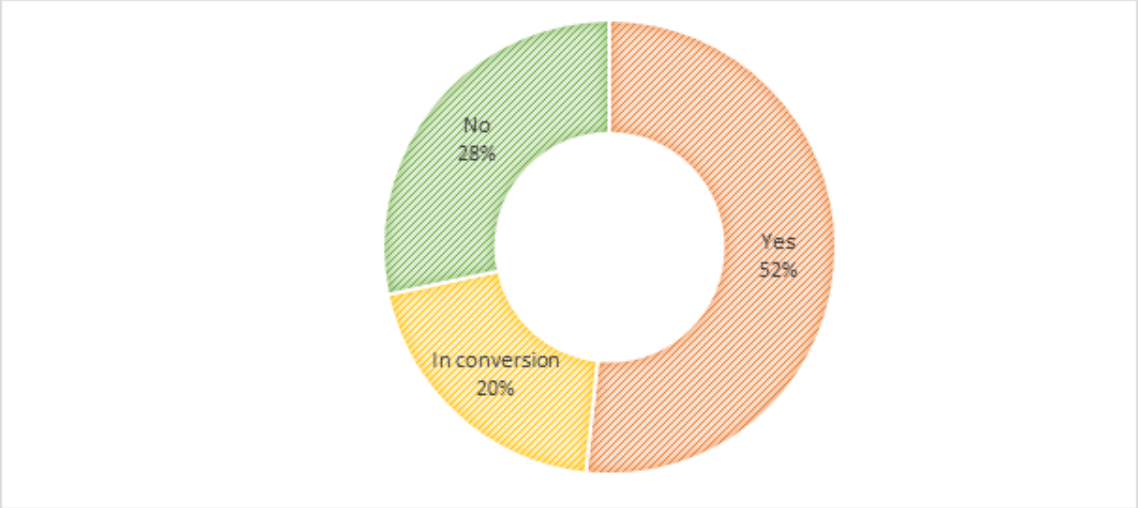


Figure 3.13: Whether the respondents' farms are organically certified

Among the respondents, more than 50.00 percent of their farms are organically certified and most of them are under group certification. Almost 20.00 percent of respondents' farms are under organically in-conversion status and about 28 percent have not yet done organic certification. To increase the organic certification, better knowledge of certification should be given among farmers and few farmers respondents that certification is not much important and required when the farmer follows the organic farming genuinely. These interpretations have been depicted in figure 3.13.

Figure 3.14: How certification has benefited the respondents

TThe benefits of certification responded by organic farm certified respondents is depicted in figure 3.14. Most of the respondents have got higher market value (40%) for their produce. Some respondents have also found that their organic produce has got higher returns (28%) but perishables have limited returns because as only some part of their produce has been sold as per the pre-order and demand. Better promotion and marketing is necessary to increase the market demand and higher yields on their commodity, and so improved marketing platforms and markets would help farmers, enabling them in turn to continue organic agriculture. Some respondents found higher quality (26%) of product, & land is maintained by regular inspection & suggestion done in the certification process

and other (06%) beneficial reasons like certified input, proper farm management & advantage of group certification and group farming.

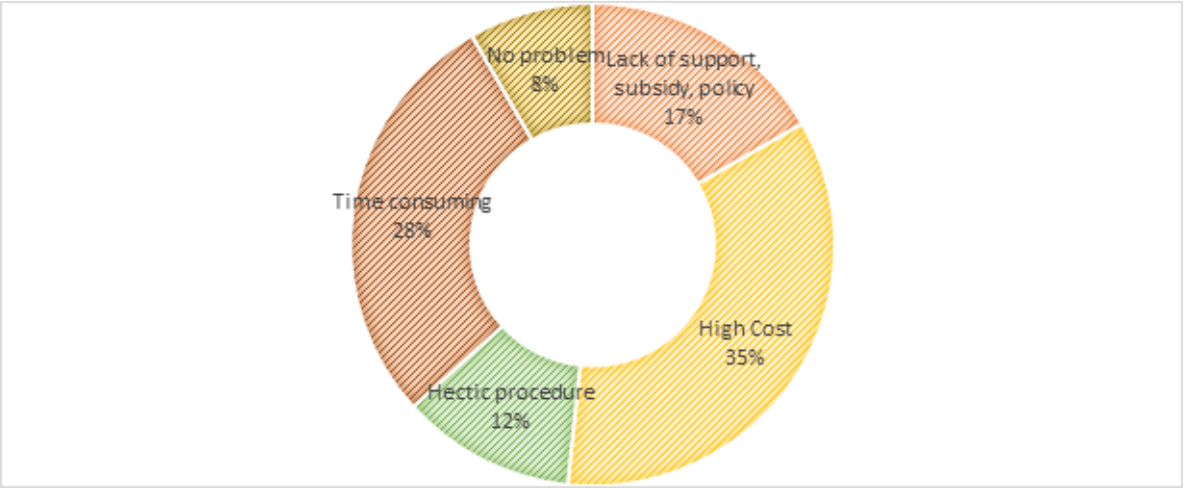


Figure 3.15: Problems faced by the respondents in the process of organic certification in the study area

Figure 3.15 presents the problems faced by the respondents in the process of organic certification in the study area. It is evident that the key problem facing the respondents are high cost of certification (35%); the costs of certification are relatively low for group certification and for most farmers it is difficult to certify individually, as they belong to the small and marginal farmers. Further, the respondent feel certification process is time consuming (28%) and involves hectic procedure (12%). Whereas, 17 percent of respondents faced lack of proper support, subsidy and policy for taking up the certification. There were few respondents who did not have any problem (08.00 percent) in the certification process and they informed that following rules of certification procedure from both farmer and certification agency side shall bring out easy & good result in certification.

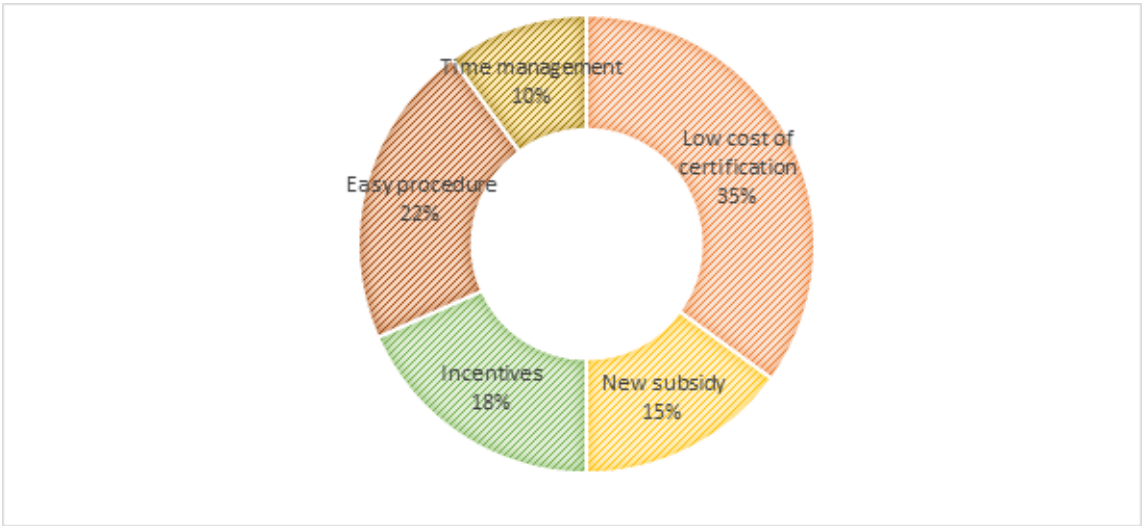


Figure 3.16: Suggestion given by respondents to increase the number organic certifications

Suggestions given by the respondents to increase the number of organic certification has been

portrayed in figure 3.16. Majority respondents have requested for the low cost of certification (35%) followed the suggested requirement for the development of easy procedure in organic certification. 18.00 percent of respondents suggested giving incentive offer for the farmer who follows the certification rules obediently and this shall also encourage other farmers to adopt organic certification.

The other suggestions given are the formation of the subsidies and schemes (15%) to reduce the charges involved in certification and about 10.00 percent of respondents observed need of time management according to crop cultivation activities for easy proceedings.

Conclusion

Section 1

The section studied the demand for the organic product from urbanities at Bengaluru Karnataka. The need and benefit of consumption of organic food are much known to the people due to their busy schedule and the majority of people who live on a low income make the concept ignored totally. And Bengaluru is one of the busiest metropolitan cities in India, where people are more dedicated towards work and earning, least concerned about their health and living environment. Bengaluru was called "Garden City" due to its greenery and this green is lost in the city as well in food habits along with the development of the city.

Presently, in the standing era, urbanites are trying to bring back the traditional food quality for safe health and environment. But, getting back to the original position is difficult and time consuming and to achieve this, people are in their nascent stage. The main thing that affects the organic products is the high price, with their mistrust products offered. Few other factors impact organic products include lack of and inadequate awareness. Often the availability of organic items is poor as needed at various periods and other causes such as a busy week schedule, branding and labelling problems and etc.

Also, most of the houses don't have kitchen/home kitchen backyard due to the small living space in the little world of Bengaluru which could have helped them in covering up of some daily needs as well help in proper waste management. The study clearly gave that, there is a high demand for organic products when they are available in considerable & affordable prices and meet the required standard quality in all range of organic products. This also indicates that there is scope for the development and establishment of new & innovative start-up in the organic and its related field both in urban and rural areas.

Section 2

The section covered the major organizations/institutes and their practices in the betterment of organics. There are both Government and other Non-Governmental Organisations engaged in full establishment and betterment of organics, especially in organic farming of the State. The Government of Agriculture, department of organic farming has developed "Organic farming policy 2017" currently with developmental schemes, projects, policies and supports for the betterment of organic farming in all the stages of production till marketing, including the certification through Karnataka State Seed and Organic Certification Agency.

Agricultural Universities/Institute are given responsibilities of research, development & training on organic farming and also engaging farmers in the development of new organic practice and dissemination of successful organic practice for higher yield and returns. The Government recognized

societies and federation like Jaivik Krishik Society, Organic Marketing Federation and other organic farmers formed societies under them are running with their respective objective for connecting the organic farmers and consumers. As this is helping the organic farmers to fetch profit and consumer get their products at an affordable price.

Apart from that NGOs (Sahaja Samrudha & Organic Karnataka Farmers Associations) are involved in helping the organic farming and adding their value to society. Aditi Organic Certifications and Akshayakalpa are examples of private organizations, rejuvenating Indian agriculture with their service, research & development for the profit of organic farmers and organization. And very differently there is an NGO (Garden City Farmers) and private organizations (My Dream Garden & Village Story) creating the awareness of need and adoption of urban organics, kitchen/home gardening and green lifestyle. Similarly, many of these organizations are in initial instalment stages and integration & interaction between them shall bring out the best outcomes in the organic sectors.

Section 3

The section portrayed the perception of organic farmers toward organic farming and organic certification at Bengaluru, Karnataka. Most of the small and marginal farmers adopted organic farming mainly due to the training they received from different organizations and more than that the farmers have found that the cost of cultivation is less when compared to conventional farming. Family mindset, good food production, soil and environmental safety are all the other factors. The problems the organic farmers have faced in the study are: labour shortage as organic agriculture needs more effort for cultural activities, apart from weeds, irrigation, low-quality approved inputs, pesticides, and marketing their harvest..

For some of the problems, farmers had their solution through traditional and cultural operations and by using their own inputs at the farm of cultivation. Almost half of the farmer has undergone organic certification process in the study area and obtained benefits both in the form of profit and health of family & soil. The problem faced by them in the certification process is the high cost for organic certification when done at an individual level compared to group certification, the hectic procedure involved and lacking awareness of supports, subsidies and policies for organic farmers. The study could see some betterment and found organic farming is in its initial stage of development and with proper co-ordination & distribution of work between all the sectors involved in organic farming can solve the issues faced.

Recommendations

- Lack and unawareness among urbanities on their existing food habit in the busy lifestyle is an important issue concerning their health. For their healthy lifestyle, there is a need to shift into organics, which will benefit the three side of the triangular economy i.e. consumers, environment and producers, all together framing a green life for the coming generation. Hence, to achieve it there is a need to develop different modes and method to educate the people to adopt organics through more workshops, training, events and media release in their weekends.
- Integrating service and industry sector with organic farming, similarly continuing with conventional farming.
- People consider organic food as 'elite' and found it costlier over conventional food, as people under below middle class and poor are not able to afford it. Therefore, the establishment of direct linkages between the producer and common people (consumers) through groups and societies under proper governance and this can make a common man afford organic food for his healthy lifestyle.
- The main problem observed in the study is scattered organic market, hence it is better to integrate different source under one brand along with dissemination of the information how it is produced & its benefits to attract the buyer at the market place and this will not confuse the buyers and also develop trust on organics with quality standards.
- There is a need to have at-least small organic growing space in their surrounding either with an individual or as a group. This can reduce the carbon footprints and maintain the climate of the place. This will also save some amount of monthly spending on basic food requirement. People can develop community organic gardens in both urban/rural for self-sustenance and commercial value.
- The Agricultural Department/Institutes will make a positive improvement by relying on various variables depending on the region like a training and growth sector in urban organic crops/ kitchens/terraces.
- Grouping of like-minded and knowledgeable people for teaching, preparation and selling of bio-products at nominal cost to common man, which develops small and medium group enterprises along with the safe environment.
- The main problem observed in the study is scattered organic market, hence it is better to integrate different source under one brand along with dissemination of the information how it is produced and benefit to attract a buyer at the market place and this will not confuse the buyers and also develop trust on organics.
- Government agencies and other related organizations in organics have developed good methods for improvement and there is also a need for organized integration among them for reaching the goal without missing any objectives and covering all the sectors. There is a need to build a strong extension system in the Government organization to reach farmers at every cover.
- Organic companies for their ease & profit focus and connect more on large organic farmers for purchases. If companies interact with small and marginal organic farmers for purchase by organizing these farmers into groups, it would help them to increase the standard of living.

- Government's support for the establishment of small and medium organic processing industry, organic retails near to consumers (under one brand at a specific distance) and organic input producing small scale industries for rural youth and women.
- Establishment of organic farming colleges, awarding degree/diploma in organic farming in Agricultural universities.
- Creating awareness on organic farming and it's all other benefits to rural development, mainly to rural youth so that they engage in organic farming and avoid migration. This can be done by establishing small training centres and educate people to improve organic farming at the village level.
- The Government's support to establish and train farmers to have other major and minor agriculture allied sectors in an organic way and this shall also engage the farmer to have organic subsidy occupation which can be integrated with organic farming.
- Development of new technology, methods and practices for better organic farming at the Agricultural department/ research institute by involving progressive farmers. Documentation of traditional practices and dissemination it to all the target zones.
- The organic agriculture is labour-intensive and labour management is important because the farmer faces the labour shortage dilemma. Organic farmers and labourers should jointly set up groups and small settlements with regular compensation according to activities in order to overcome agricultural labour requirements and enable farmers to accomplish the job and simple working management.
- Creating awareness for the need of certification among the organic farmers for the better price of their yields. Developing an easier procedure with time management among both the farmer and certification agency. Cost of certification can be lowered by establishing small certification centre along with quality testing centres at the village level and this can reduce the time involved in the certification process and which in-turn also create employment opportunities.
- Establishment of Infrastructures like APMC's and warehouses for fair marketing and management of organic produce bought by organic producers, which is very similar to present infrastructures for conventional products.

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Annexure

Approved Fee Structure (Annual) for Organic Certification (NPOP only)

Table 2.2.1 Category: Individual Operator

Sl No	Component	Size of the Land Holding	Amount (In Rs.)
1.	Registration Fee, Inspection & Report Preparation (including Tracenet work), Scope Certificate generation, etc. (per year)	a) Up to 2 Ha.	5000
		b) > 2 Ha to 4 Ha.	6000
		c) > 4 Ha to 6 Ha.	7000
		d) >6 Ha to 8 Ha.	8000
		e) > 8 Ha to 10 Ha.	9000
		f) > 10 Ha	10000 + Rs. 200/- per 0.4 Ha for every additional acreage after 10 ha
2.	Transaction Certificate-on NPOP (per copy), if required		500
3.	Lab Test charges (if required) – Soil, Water & residue analysis of produce/products		Actual Cost
4.	Fee for Appeals (per appeal)		500

Table 2.2.2 Category: Group (ICS) Operator

Sl No	Component	Size of the Group		Amount (In Rs.)
		No. Of Farmers	Area (Ha)	
1.	Registration Fee, Inspection & Report Preparation (including Tracenet work), Scope Certificate generation, etc. (per year)	a) 25 to 50	Up to 40	25000
		b) 51 to 100	> 41 to 80	30000
		c) 101 to 150	> 81 to 120	35000
		d) 151 to 300	>121 to 160	40000
		e) 301 to 500	> 161 to 200	40000 plus Rs.100/-per Farmer for every additional farmer above 300.
2.	Transaction Certificate-on NPOP (per copy), if required			500
3.	Lab Test charges (if required) – Soil, Water & residue analysis of produce/ products Lab Test charges (if required) – Soil, Water & residue analysis of produce/ products			Actual Cost
4.	Fee for Appeals (per appeal)			500

Table 2.2.3 Category: Input (Small size unit)

Sl.No.	Service charges	Units/Man day	Rs/unit	Total (Rs)
1.	Registration	1	2000	2000
2.	Inspection	1	3000	3000
3.	Certification	1	5000	5000
4.	Scope Certificate	1	500	500
5.	Travel Time	1	1000	1000
6.	Travel (In Km)	800	5	4000
7.	L & B	1	800	800
	Total			**16300**

Table 2.2.4 Category: Wild collection

Sl.No.	Service charges	Units/Man day	Rs/unit	Total (Rs)
1.	Registration	1	2000	2000
2.	Inspection	2	3000	6000
3.	Certification	1	5000	5000
4.	Scope Certificate	1	500	500
5.	Travel Time	1	1000	1000
6.	Travel (In Km)	800	5	4000
7.	L & B	2	800	1600
	Total			**20100**

Table 2.2.5 Processing (Small size unit)

Sl.No.	Service charges	Units/Man day	Rs/unit	Total (Rs)
1.	Registration	1	1000	2000
2.	Inspection	1	5000	5000
3.	Certification	1	7000	7000
4.	Scope Certificate	1	500	500
5.	Travel Time	1	1000	1000
6.	Travel (In Km)	800	5	4000
7.	L & B	1	800	800
	Total			**20300**

Table 2.2.6 Traders

Sl.No.	Service charges	Units/Man day	Rs/unit	Total (Rs)
1.	Registration	1	5000	5000
2.	Inspection	1	5000	5000
3.	Certification	1	10000	10000
4.	Scope Certificate	1	500	500
5.	Travel Time	1	1000	1000
6.	Travel (In Km)	800	5	4000
7.	L & B	1	800	800
	Total			**26300**

Table 3.1.1 Regular Fee charged by ADITI in the process of inspection and certification services

Item	Certification on NPOP or NOP or Standards (in Rupees)	Remarks
Fee for Inspection to Individual farmers	10,000/- per day for ≤ 50 acre & 1 5,000/- per day for >50 acre	For preparations, inspection visits and administration work
Fee for Inspection to Grower groups & Small holder groups	15,000/- per day	
Fee for Inspection to Small processors (Cottage Industry)	10,000/- per day	
Fee for Inspection to Estates, Medium size processors and Manufacturers/ Exporters/Importers	15,000/- per day	
Fee for Inspection to Animal Husbandry	10,000/- for small business & 15,000/- for medium and large business	
Fee for travel time	5,000/- per day	
Travel Expenses	Actuals	For travel, accommodation and food, where applicable
Report preparation	5,000/- for NPOP 8,000/- for NPOP & NOP	

Certification NPOP-Crop production/ Gowers Group & processing units Animal Husbandry/Mushroom production/Beekeeping/Green House crop production	5,000/- (NPOP) 10,000/- (NPOP) 25,000/- (NOP, USDA)	
Fees per Provisional Transaction Certificate Inter-Organization Transaction Certificate Domestic Transaction Certificate Export Transaction Certificate	500/- 500/- 1500/- 2000/-	An Additional fee of 0.5% on the total value of each consignment will be charged for domestic and export Transaction Certificate
Lab Analysis, if required	Actual costs	Field and post-harvest samples
Updating closing stock details	10/- per farmer	
Pre scope audit	5,000/- per day	
Training to farmers, if required	5,000/-	

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