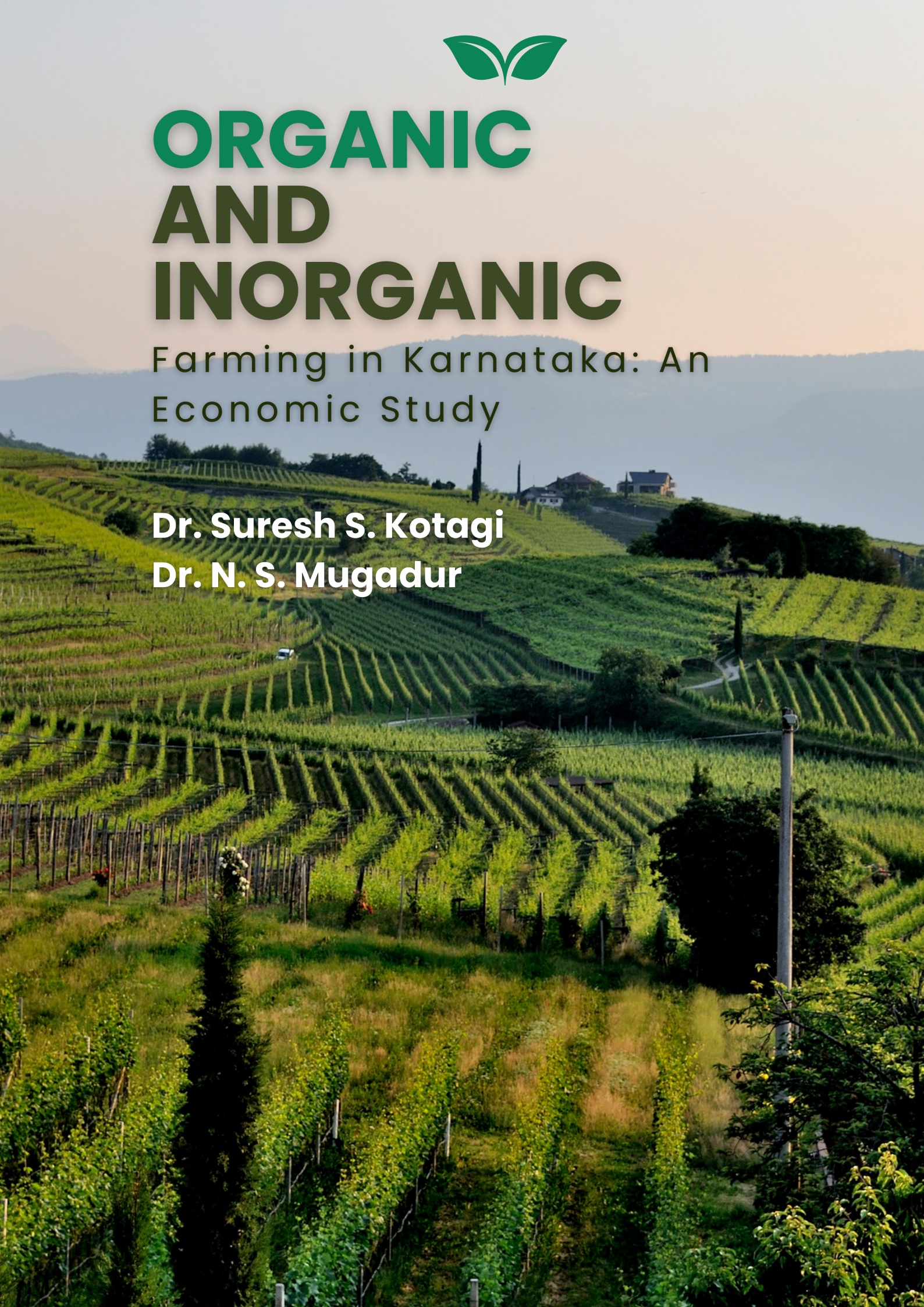
ORGANIC AND INORGANIC

Farming in Karnataka: An Economic Study

Dr. Suresh S. Kotagi
Dr. N. S. Mugadur



Organic and Inorganic Farming in Karnataka: An Economic Study

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Organic and Inorganic Farming in Karnataka: An Economic Study

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Organic and Inorganic Farming in Karnataka: An Economic Study

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Dedicated

This Book is affectionately
Dedicated to my beloved

Parents
Shri. Sharanappa V. Kotagi
Smt. Mahadevi S. Kotagi

Wife
Smt. Lata S. Kotagi

Children's
Khushi & Kritik

Preface

It is a matter of great pleasure for us to place our book "Organic and Inorganic Farming in Karnataka: An Economic Study" in the hand of students and teachers. The main objective of this book is to provide appropriate information about Organic and Inorganic farming in Karnataka.

Agriculture is the mainstay of any economy's long-term sustainability. Agricultural practices have been carried out with irrational use of chemical inputs over the past four decades, which has resulted in not only the loss of natural habitat balance but also manyhazards like soil erosion, depletion of ground water, soil salinization, pollution, genetic erosion, ill effects on the environment, reduced food quality, and an increased cost of cultivation. Therefore, organic farming plays an important role in the Indian economy. The organic farming process is more eco- friendly than inorganic farming, and it promotes the use of crop rotations. Organic farming aims to produce quality and safe agricultural products that contain no chemical residues. On the contrary, inorganic farming refers to a production system that employs a full range of pre- and post-plant tillage practices, synthetic fertilizers, and pesticides. In the past few decades, there has been a rapid spread of organic farming, which has contributed to a dramatic change in agriculture.

The study assumes significance in the context of examining the role played by organic farming and inorganic farming the agri-business in the utilizations of natural resources, in promoting human resources for reconstruction of agricultural economy. To achieve the goal of agro vibrant and self-reliance among the people, the governance of sustainable farming assumes greater momentum. In this regard, economic analysis of organic and inorganic farming operation would be driving force for the successful venture.

The several studies of organic and inorganic farming show differing results as some reveals its positive aspects of benefits of safeguarding organic farming as others explain the constraints in executing the programmes. The central and state Governments have implemented various schemes and programmes to perform the functions of organic farming. In this respect, it is required to assess the nature, structure and components and performance of organic and inorganic farming at micro level.

In Karnataka state, Gadag district has seven taluks, it is playing a vital role in agriculture field. For the study, out of seven taluks, five taluks have been selected and collected the primary data. The study has both primary and secondary data base.

The book entitled “Organic and Inorganic Farming in Karnataka: An Economic Study” is written in a simple language and field survey based. I hope this book is helpful to the agricultural economics students, researchers and policy makers.

I am pleased to receive valuable suggestions and opinions from the learned teachers, researchers and students of the subject for its improvement which shall be most welcome.

Dr. Suresh S Kotagi

Acknowledgement

It is a pleasant time to express my heartfelt gratitude to everyone who has helped me in completion of this book. I dedicate this page to all those people who have helped me to explore the knowledge. I acknowledge my deep sense of gratitude to Karnatak University, Dharawad to awarded my Ph.D. degree in Economics and permitted a carried out research work in the form of book.

I would like to express my sincere gratitude to my research guide **Dr. N. S. Mugadur**, Assistant Professor, Department of Economics, Karnatak University, Dharwad for his patience, Motivation, valuable suggestions and continuous support throughout my work and without his kindness & encouragement this work would not have been completed.

I am grateful to thank Dr. S. B. Nari, Chairman, Department of Economics Karnatak University Dharwad for their support & Encouragement in my work. I also thanks to all my teachers Dr.S.T.Bagalkoti, Dr.H.H.Bharadi, Dr.R.R.Biradar, Dr.B.H.Nagoor, Dr.R.N. Kadam and also Retired Prof. P.M. Honakeri for their support and encouragement in my work.

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During my field visit for collection of primary data, I came across so many supporters so I sincerely thank to my PG Students Chandrashekar H Chavan, Umesh Javoor and Maheshkumar Killedar.

I acknowledge my deep sense of gratitude for the encouragement, co-operation and inspiration on me by my Father **Shri. Sharanappa V. Kotagi** and Mother **Smt. Mahadevi**, who helped me a lot to reach at this stage of my life. I also extend the heartfelt thanks to my dear wife **Lata S. Kotagi** with love & affection and my Special thanks to my beloved daughter **Khushi** & Son **Kritik Kotagi** and all other family members, Relatives, Friends and Colleagues for their support.

Last but not least, my sincere thanks to all the people who have helped me directly and indirectly for the completion of my task.

Dr. Suresh S Kotagi

List of Abbreviations

APEDA	: Agricultural and Processed Food Products Export Development Authority
ATMA	: Agricultural Technology Management Agency
DAP	: Di- Ammonium Phosphate
DEA	: Data Envelopment Analysis
GDP	: Gross Domestic Product
GOVT	: Government
GSDP	: Gross State Domestic Prod
HOPKOMS	: Horticultural Producers Cooperative Marketing and Processing Society
HYV	: High Yield Variety
ICAR	: Indian Council of Agricultural Research
ICS	: Internal Control System
IF	: Inorganic Farming/Farmers
IFOAM	: International Federation of Organic Agriculture Movements)
INM	: Integrated Nutrient Management
INSIMP	: Initiative for Nutritional Security through Intensive Millets Promotion Programme
IOF	: Institute of Organic Farming
IPM	: Integrated Pest Management
ISOPOM	: Integrated scheme for Oilseeds Oil Palm and maize
KKM	: Karnataka Krishi Mission
KVK	: Krishi Vighyan Kendra
MOVCDNER	: Mission Organic Valve Chain Development for North East Region
MSP	: Minimum Support Price
NCOF	: National Centre of Organic Farming
NFSM	: National Food Security Mission
NGO	: Non-Government Organisation
NMOOP	: National Mission on Oilseeds and Oil Palm
NOSB	: National Organic Standards Board
NPK	: Nitrogen, Phosphorus, and Potassium
NPOF	: National Project on Organic Farming
NPOP	: National Program for Organic Production
OBC	: Other Backward Caste

OF	: Organic Farming/Farmers
OFRC	: Organic Farming Research Centre
OFRI	Organic Farming Research Institute
OPAE	: Oil Palm Area Expansion
PKVY	: Paramparagat Krishi Vikas Yojana
QT	: Quantity
RCOF	: Regional Centre of Organic Farming
RIOF	: Research Institute on Organic Farming
RKBY	: Rashtriya Krishi Bima Yojana
RKVY	: Rastriya Krishi Vikas Yojana
RSK	: Raitha Samparka Kendra
SC	: Schedule Caste
ST	: Schedule Tribe
TBO	: Tree Borne Oilseeds

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Chapter - 1

Introduction

Introduction

Indian economy is an agrarian economy. Therefore, agriculture is one of the important indicators of Indian Economic system. Agriculture provides a huge number of employment opportunities to human resource by directly and indirectly in rural area. Also, many industries are running and producing goods with the help of agriculture. So those industries are called as agro-based industries. Agriculture has great importance but it is also not free from natural factors like uncertainty of rain, flood, earthquakes, droughts and unfavorable agro- climatic conditions.

In recent times, agricultural practices are carried out with irrational use of chemical inputs over the past four decades that has resulted in not only loss of natural habitat balance and also caused many hazards like soil erosion, depletion of groundwater, soil Salinization, pollution, genetic erosion, ill effects on environment, reduced food quality and increased cost of cultivation. Some of the factors that contributed to the present crisis in Farming could be the shooting-up of the price of factory-made external inputs and the government's slow withdrawal of investment as well as market intervention and more significantly, shifting of subsistence Farming (mainly with home grown inputs) to Commercial Farming (largely with purchased inputs). In other words, local indigenous farm techniques have been wiped out and were replaced by the modern techniques resulting in an unviable and unsustainable Farming. It is in this context that alternative farm techniques and strategies for growing crops must to be found in the larger interest.The principle of Organic cultivation is many state-supported agencies, Non-Governmental Organizations (NGOs) and individuals have started experimenting with Organic methods of food production in the recent past.

Organic Farming

The Organic Farming process is more eco-friendly than conventional Farming and it promotes the use of crop rotations. Organic Farming aims at production of quality and safe agricultural products, which contain no chemical residues. Price of Organic crops is generally higher than those inorganically grown crops.

The most popularly accepted definition of Organic Farming is: '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 these 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 agronomic, biological and mechanical methods as opposed to using synthetic materials to fulfill any specific function within the system. National Organic Standards Board (NOSB) definition, April 1995, 'Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity.

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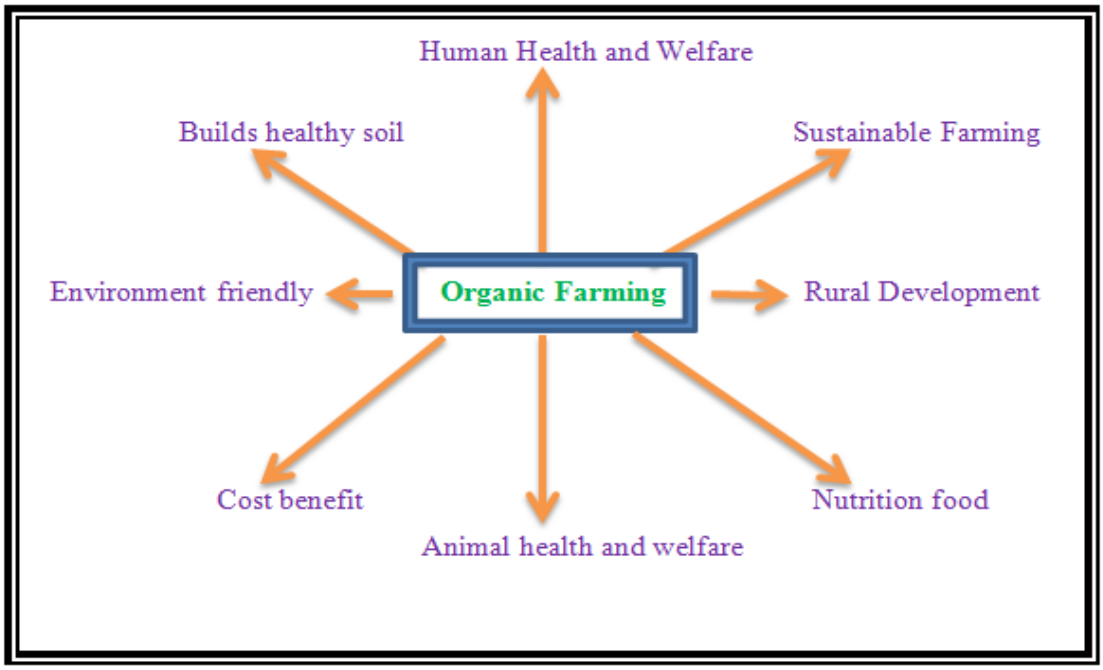
Chart-1.1 Important Benefits of Organic Farming



The concept of Organic agriculture has been defined differently by different researchers. To majority, it indicates simply the use of Organic manures and indigenous plant protection methods without the usage of synthetic fertilizers and pesticides. IFOAM (International Federation of Organic Agriculture Movements) explains the main goal of Organic Farming as 'Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved'.

In the past few decades, there has been a rapid spread in Organic Farming, and this contributing to a dramatic change in the agriculture. There are a number of ways in which Organic agriculture differs from the Inorganic one. On other hand, Organic agriculture uses Organic wastes and compost as fertilizers, this resulting in increase of nutrients which are supplied by plants.

Inorganic Farming

The Inorganic Farming refers to a production system that employs a full range of pre and post plant tillage practices, synthetic fertilizers and pesticides. And also it is an agriculture production method which involves the use of pesticides and fertilizers to increase the yield. The Increased use of synthetic chemical fertilizers and pesticides in agriculture stated that in India since 1960s as part of the Green Revolution. Many of the chemical pesticides can have harmful effects on human beings and environment. Over application of chemical inputs on agriculture results in reduced profitability and environmental negative impacts on soil fertility, water degradation and reduction of nutrition in crops.

The goal of Inorganic Farming is to maximize the potential yield of crops. This can be achieved through the application of synthetic chemicals. In the Inorganic Farming biodiversity, soil fertility and ecosystems health are compromised. Inorganic farm requires constant maintenance

and more application of chemical fertilizers for good yields. Inorganic Farming has made the today farmers searching for something better, in addition Farmers are pursing chemical supplements to push crop yield and get more profit.

Theoretical Framework

Cobb – Douglas Production Function

It was originally proposed by Knut Wicksell (1851-1926). It represents the functional relationship between input and output and statistically tested by Charles Cobb and Poul Douglas in 1928. It is the proportionate change in all factors of production; the output also increases in the same proportion. It is linear homogenous production function.

$$\mathbf{Q=AL^{\alpha} K^{\beta}}$$

Q- Total Production

L- Labor input

K- Capital input

A-total factor productivity

α and β are the output elasticity of labor and capital

In Economics, production function gives the technological relation between quantities of physical inputs and quantities of output of goods. The production function is one of the key concepts of main stream of neoclassical theories used to define marginal product and to distinguish allocative efficiency, a key focus of economics. Another important purpose of the production function is to address allocative efficiency in the use of factor inputs in production and the resulting distribution of income to those factors.

The output of Agricultural production directly depends on Labor (L) and Capital (C) inputs like a HYV Seeds, Fertilizer, Farm power, pesticides, Livestock and Irrigation system. If the use of all the factors in the field, it can increase Output of agriculture.

Based on above theory, it can establish the Relationship of production and productivity of Farming. There is a direct and positive relation between the inputs and outputs of Farming.

Statement of the Problem

The application of chemical inputs is high in Indian agriculture. It will effect on soil fertility and result in declining productivity. In the long term more usage of chemical fertilizers leads to higher cost of cultivation because of chemical based Farming manure. In order to meet the increasing cost of cultivation, the Farmers obtain credit and it became more difficulty in handling inputs and outputs ratio. The Farmers practicing Inorganic cultivation confront the problems like land degradation, water scarcity and declining productivity and increasing cost of cultivation. To avoid such problems there is a need of another method. As an alternative to the existing method of cultivation, Organic Farming is recommended by scientists, activists and by government in recent years. It is increasingly recognized that yield from Organic Farming is sustainable. There are a good number of studies that have made attempt to show that the plant micro nutrients are sustained in Organic cultivation. The Organic Farming enhances yield, reduces cost of Farming, provides higher profit, and increases self-reliance, conservation of soil and water resources. Organic Farming is cited as performing better in rain-fed regions than irrigated regions. There are also a few areas in hilly regions in India, where Organic Farming is practiced by tradition. Such regions have more scope for developing of Organic agriculture.

Significance of the Study

In a view of protect the soil fertility, and to get average yield, minimize of costs and to maximize profits, Organic Farming is essential in this period. Hence, the role of Organic

Farming is most important for soil conservation, healthy foods and sustainability of agriculture products.

Organic agriculture is productive and sustainable. The efficiency of Organic Farming mainly depends upon the Organic manure which is available by nature. An Organic pesticide is low cost and takes care of environmental concerns of Farming. Today, it has become very important for human being for healthy food and sustainability of environment. Organic Farming improves human health. And also organically produced goods offer the safest products for human consumption than any other available food products. Hence, it is very important to develop an Organic agricultural sector for the growth and prosperity of the nation as a whole.

Research Gap

The perusal of literature and research reveals that most of the studies have focused on the specific issues like possibilities and constraints of Farming and also the application impact of fertilizers on health and nutrition food by Organic Farming and Inorganic Farming. Hence, the present study focused on socio-economic condition of Organic Farmers and Inorganic Farmers as well as Organic Farmers faced problems. And also, study tries to compare the production and productivity of crops under both Farming methods. In the study an attempt has been made to analyze the cost of production and return under Organic Farming and Inorganic Farming method.

Research Issues

1. What is the difference between production under Organic and Inorganic Farming?
2. What is the role of Organic Farming in the Socio-economic Condition of Farmers?
3. What is the Cost and benefits of Organic and Inorganic Farming?

Objectives of the Study

1. To evaluate the input and cost structure of Organic Farming and Inorganic Farming in selected crops
2. To analyse the production and productivity of Organic and Inorganic Farming in selected crops
3. To study the socio-economic conditions of Organic and Inorganic Farmers in the study area
4. To compare the market prices and returns between Organic and Inorganic Farming in the study area
5. To suggest appropriate measures to improve the Farming Method.

Hypotheses of the Study

1. The Cost of Farming is higher across the crops under Inorganic Farming as compared to Organic Farming.
2. There is no significant relationship between production and productivity in selected crops of Inorganic Farming to Organic Farming.

Research Methodology

Nature and Sources of Data

The study is based on both primary and secondary data. The secondary data was collected from the Ministry of Agriculture, Govt. of India, Raita Samparka Kendra, Savayav Krishi Sanga Parivar, Department of Agriculture and Government of Karnataka. Primary data was collected through interview schedule method based on the collected data by using formal lists of questions asked to all the respondents in the same way. It was included about socio-economic

conditions of Farmers, differentiation between organic and inorganic farming method, use of manures, input costs, yields, market prices and returns.

Period of the study

In order to examine the Organic and Inorganic Farming performance, the study consists of period of 2001 to 2022 based on secondary data. The primary data was collected for the period of 2019-2020.

Study Area

The primary data was collected from the Gadag District in Karnataka state.

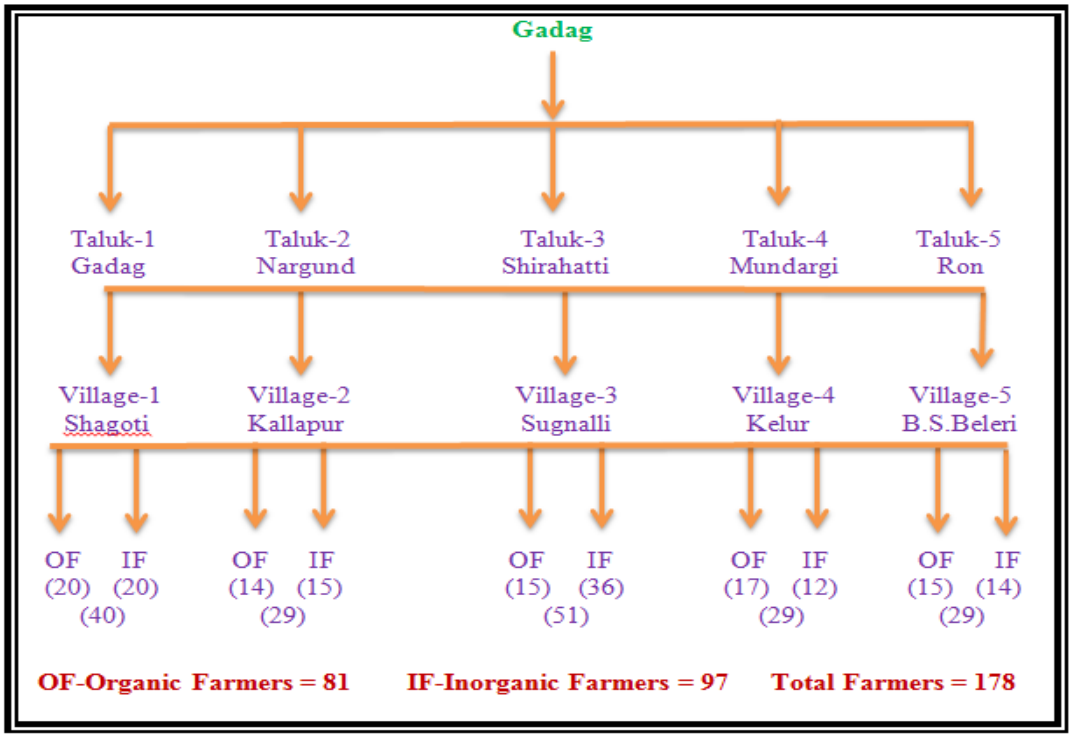
i) Selection of Five talukas in the district.

ii) Selection of One village from each taluk.

iii) Selection of Organic and Inorganic farm households among the villages identified in each of the villages selected.

The study was confined to the Farmers of five villages of Shagoti, Kallapur. Suganalli, Kelur and B.S.Beleri of Gadag, Nargund, Shirahatti, Mundargi and Ron talukas respectively of the Gadag District of Karnataka state.

Chart-1.2 Selection of Study Area



Above chart clearly indicates that initially one district was selected and on the basis of availability of Organic Farmers in the district, five talukas were selected. In each taluka one village was selected. The study also was taken into consideration of each village, and from Organic Farming 25 per cent of Farmers were selected followed by 10 per cent of Farmers have been selected from Inorganic Farming method. Total 178 Farmers were selected for the study.

Selected Crops for Study

The study selected six crops namely Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram from both the Organic and Inorganic Farming method to compare in the different aspects.

Sampling Design

The study was basically related to the Gadag District, the samples of Farmers were drawn from the taluks. Purposive sampling method was used for the collection of data. The Samples drawn based on the Salant and Dillman Approach at 90 per cent Confidence level in which selected villages namely Shagoti, Kallapur, Sugnalli, Kelur and B.S Beleri have been chosen from the Gadag District of Gadag, Nargund, Shirahatti, Mundargi and Ron talukas.

Table-1.1 Details of Sample Size in Taluka wise of Gadag District
(In Numbers)

Name of Talukas	Organic Farming Adopted Village	Total Population	Total Farmers in the Village	Total Organic Farmers	Sample Organic Farmers	Total Inorganic Farmers	Sample Inorganic Farmers	Total Samples
Gadag	Shagoti	2437	282	80	20	202	20	**40**
Naragund	Kallapur	1902	201	55	14	146	15	**29**
Shirahatti	Suganalli	2170	415	58	15	357	36	**51**
Mundargi	Kelur	758	191	68	17	123	12	**29**
Ron	B.S.Beleri	1149	201	61	15	140	14	**29**
Total		8416	322	1290	**81**	968	**97**	**178**

Source: Gram Panchayat and Raitha Samparka Kendra.

Tools of Data Analysis

In the study were used simple statistical tools like average, percentage, Ratio Growth Rate and Benefit-Cost Ratio. The average of all the six crops of production cost, marketing cost, labor cost, revenue and net return of per acre of Organic and Inorganic Farming were calculated by this method.

Another one of the simple statistical tools of Percentage is used to find out the different aspects of the study. For the comparison of organic and inorganic farmers socio economic condition like age group, Caste, type of family, level of education, marital status, subsidiary occupation of farmers, land ownership, size of land holdings, and income of households has been calculated by this method.

- Formulae Used:

$$\text{Percentage of Farmers} = \frac{\text{Number of Farmers in a particular type of Farming method}}{\text{Total Number of Farmers}} \times 100$$

One more statistical tool of Benefit-cost ratio is used to find the cost and benefit of crops by Farming method. The benefit cost ratio indicates the relationship of cost and benefit. It can be determined by the total return divided by total input cost of farming.

- Formula of Benefit-Cost Ratio:

$$\text{Benefit} - \text{Cost Ratio} = \frac{\text{Gross Returns (Total Returns)}}{\text{Total Expenditure Incurred (Total Cost)}} \times 100$$

Limitations of the Study

The study area was specific and micro level. It covers only one district. No systematic records were maintained in the farmer's community. Hence, cost particulars that will be obtained orally from the farmers in which accuracy will be limited by their bias. Besides these limitations, sincere efforts will be made to make this study as an objective, definitive and systematic one to the extent possible. In spite of the individual bias made by the respondent farmers in providing the necessary responses, it is believed that the findings and conclusions drawn in the present study would form the basis for future research study.

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Chapter - 2

Review of Literature

Introduction

The chapter consists the following literature review is related to socio-economic Conditions of Farmers, inputs, yields, employment opportunity, returns from Organic Farming and marketing and nutritional food in Farming sector. It also includes government policies on Organic Farming in India. It also covers the Inorganic Farming effects on environment, human health, and soil fertility and it also includes comparison between Organic Farming and Inorganic Farming on various aspects is as follows:

1. Organic Farming participation, constraints, production system

2. Inorganic Farming Effects on Human Health and Environment

3. Comparison of Organic and Inorganic Farming cost and various aspects of production

1. Organic Farming participation, constraints, production system

Nazeerudin, (2013) studied the participation of Organic Farmers. Organic agriculture is favourable model to sustainable agriculture. It provides many benefits like high demand, high price, nutrition food and more rural employment opportunities and social benefits. Basically, study is based on primary data. It covers three talukas of Tumkur district of Karnataka state, where Organic agriculture is practiced in the last 15 years. For collection of information focus group discussion and participatory approach method has been used. The respondents were categorized into small, medium, and large Farmers based on the size of land holdings. Farmer's age group is 45-55. They produced under organic farming respectively Ragi, Paddy, Coconut, Maize, Vegetables, groundnuts and sunflower. The Study concluded with some farmer faced problems to adopt Organic Farming. Among them labour intensive, slow process of Organic manure and general unavailability of Organic fertilizers. Many of them created their own manure methods such as vermi compost, dried leaves and agriculture waste etc. Most of the Farmers viewed that Organic Farming is cheap and crops do not spread diseases. Organic Farming training is required and visits of technical persons and workshops for Farmers to be conduct by NGO's and government. And also, Farmers felt that separate markets and scientific tests and approved techniques of the Farming by agricultural scientists are essential for Organic Farming.

Gopakkali and Sharnappa (2014) examined the Organic Farming effects on growth yield and quality of onion in dry zone of Karnataka. Demand for Organically grown vegetable is increasing at all over the world market. Human's concern on health and environment is also one of the major effective factors to grow Organic products. Onion is one of the major crops in the world. In 2012 field experiment was conducted at zonal agriculture research station GKVK farm Bangalore and there were 13 treatments under Organic crop production, such as farmyard manure, vermin compost, Bio-digested and enriched, Bio-digested liquid manures and Panchagavya. The study resulted that cost of cultivation of onion due to use of Panchagavya is lower and cost effective when compared to conventional fertilizers. The Organic manure showed that higher benefit cost-ratio and benefits of quality and nutritional value of Organic manure. Bio-digested liquid manure and Panchagavya had increased the yield of onion.

Kumara et al. (2015) examined the economic benefits from adoption of Organic Farming. It supports to environment also. Organic Farming method has been popularized in several states. Use of the Chemical fertilizers in the agriculture sector, affects adversely on human health as well as on environment also. Study was conducted in the Nasik district of Maharashtra state during 2012-13. Field survey method has used to collect the data. Total 120 Farmers were interviewed from 8 villages. Tabular analysis cost of cultivation and production function were used for compare a economics of Organic and Traditional Farming. And result was, yield from Organic Farming is low and to compensate these Farmers showed an attitude to practice Organic Farming in larger areas. Due to profitability and Climate suitability Farmers have

practiced mainly tomato crop production. Government departments are providing inputs like bio-fertilizers and pesticides to Organic Farmers and two Farmers' societies are working in the study area namely Kashyap group and Maharashtra Rajya Draksha Bangaitdar Sangha cooperative society. Many Farmers are interested to take training in distance place also. In the study are first they applied Organic Farming to grapes production later they expanded to several other crops also.

Study concluded with, farmers are adopting Organic Farming and they are increasing the farm size. Farmers are taking training to adopt an Organic Farming. Due to better rate for Organic crops, many are getting good remuneration. Technology development increases Farming interest on Organic Farming.

Deshmukh and Babar (2015) reviewed Organic Farming contribution to sustainable agriculture development. In the word, Organic Farming is getting more popularity, because of health and environmental consciousness Organic agriculture improves the health of soil and plant also. The study is based on secondary data. Information was collected by published sources such as publication of European Union, IFOAM, APEDA, FIBL, Journals and periodicals. Australia has highest area under Organic cultivation. In 2013, India has only 1.6 per cent area under Organic agriculture and Organic agriculture cost of production is very low. Even it helps to improve farmer's income also. Conventional agriculture products are available at cheaper rate than the Organic products. But consumers are showing more interest on Organic products. In Europe and North America for Organic food demand is increasing. In India, Organic food consumption is very low. The study concluded that many countries are able to convert their cultivated areas into Organic Farming. And India produces more Organic products and exports to other countries. In developing countries, Organic agriculture occupies only a small areas Organic agriculture provides improved soil fertility. For sustainable agriculture separate market is essential. Co-operatives are best to improve market channels of Organic products. Effective certification system needs to be promoting for develop an Organic Farming. With the help of Organic Farming we can beat the vicious cycle of poverty. Government policies are best ways to adopt Organic Farming for sustainable Farming.

Shehrawat et al (2016) analysed the constraints of Organic Farming. Organic Farming minimizes the cost of cultivation and provides healthy food. It improves soil health and reduces human and animal health hazards. The Study was conducted in two districts of Sonipat and Hisar of Haryana state. From each district two blocks have been selected total 120 Farmers were interviewed and measured constraints of Organic Farming. In these, districts multiple cropping systems are practiced. The study resulted that constraints in adoption of Organic Farming namely low production of Organic produce, and followed less demand for Organic products because of these products prices are more. Unavailability of soil and water testing labs are one of the constraints of Organic Farming. Major constraint is low production from Organic Farming method, and also lack of knowledge and difficult in handling the Organic manure. And technical and marketing constraints were also identified in the study. Farmer's perception on certification also found as high cost and lack of knowledge about certification. Organic Farming provides good and safety food and Farmers are receiving a fair return. But also, at the same time they are facing many constraints so there is a need to promote Organic Farming in a big way to tackles the present situation.

Gour (2016) examined the Organic Farming status and prospects. Sustainable agriculture objectives meet up by Organic Farming. In India many Farmers practices traditional agriculture. By modern agricultural practices many adverse effects are there like health of all living things. And it effects on soil erosion, and water shortages etc. To avoid this type of effects Organic Farming is one of the most useful methods. This study includes many reviews on literature of Howard's, Geier, Kaushik and Sharma, and it is based on secondary data. For this IFOAM,

Books and Periodicals and newspaper reports has been used. Organic Farming has many benefits like nutritional food, and fertility of soil, as well as health benefits also. There may be several constraints like lack of awareness marketing and low yields. Many states have progressed in Organic Farming system. Recently, Sikkim state becomes first Indian state to go wholly Organic Farming. The study has reviewed about Organic Farming scenario and conversion of conventional to Organic Farming. And also found that Effects on yield reduction, certification and marketing problems. And there is a need for support to Organic Farming and subsidies to Organic products, and research on Organic Farming. Finally, study argued that Organic Farming is productive and sustainable. In the developed countries demand for Organic products are increasing.

Sudheer (2011) Study mainly focused on Organic Farming in Andhra Pradesh state. Such as East Godavari, Mahabubnagar and Anantapur have been selected for the study. To study Paddy, Red gram and Groundnut crops have been selected. Total 550 sample households were selected, out of those 350 samples from Organic and 200 from Conventional farming has been taken for the research. The study is based on primary and secondary data collected from various sources. For the selection of samples multi stage stratified random sampling techniques has been used and study includes small farms, medium farms and large farms. The researcher tried to compare the various cost of cultivation and returns from Organic and Conventional Farming.

The study found that the cost of all three crops to be relatively higher on Conventional Farming compared to Organic Farming. Study concluded with some findings, the Farmers of both Organic and Conventional Farming are getting profits; Switching of Organic Farming is possible with electronic media. And if government provides some subsidies on Organic inputs then it will spread in more farms. Researcher suggests separate marketing channels and announcement of premium prices for Organic Crops. And also, creation of demand for Organic crops by awareness programs should be done by authorities.

Roychowdhury et al, (2013) reviewed the Organic Farming in India. It contains the literature review based on Organic Farming in India. In the name of productivity in conventional Farming application of chemical fertilizers are being affect on health factor. Organic Farming is solution to the health problems. And alternative method is required for satisfy the needs of food production. A government policy encourages Organic Farming. Principle of maintain a long-term soil fertility and produces a nutritional quality food and it's required for future generation also. Naturally produced food items has more profitable compared to conventional produced crops, even yield also more in natural manure. It protects human health also. There are many consumers unaware of Organic manure. Government of India is encouraging for Organic Farming and as well as exports of the Organic products and some organizations are establishing market and demand for organically produced food products.

Meena et al, (2013) focuses on the Organic Farming. The study talks about production management system. It is purely based on secondary data. It covers international perspectives. The study found that Organic agriculture is practiced in 120 countries. It helps to produce nutrient food and also this Farming method includes crop rotations, crop residues, animal manures. The study also supports plant protection and ecosystem health. The results revealed to subsistence agriculture of developing. This study includes begins of Organic agriculture, principles advantages and disadvantages and also explains future prospects. Now a day for Organic food, local demand is increasing. In India, Organic movements depend on the growth of markets. The Study also indicated awareness of quality foods and long-term sustainability of the systems and ensures a debt free and profitable livelihood Organic Farming reduces the environmental pollutions.

Reddy et al. (2013) reviewed the Organic Farming system in Gadag district of Karnataka state (India). Awareness of health and environment issues is increasing demands for Organic food. An Organic product contains more vitamins and a mineral. The study is based on primary data; study period was 2011-12. Multistage random sampling tool has used for data collection on cost and returns with the help of personal interview. In the district, five talukas have been selected as well as in each taluka one village has selected. Every village covers 19 Organic Farmers information. The tabular technique was used for study the costs and returns of Organic Farming. In the study of Farming system identified as FS-I: Green gram + Jowar +Dairy; FS-II: Groundnut+ Maize +Dairy and FS-III: Cotton + Chili +Onion +mango respectively. In Dairy expense on human labour was Maximum compared to other components. As compared to dairy And Maize crop production cost found groundnut production cost was to be highest. Overall, the study concluded that FS-III is found to be profitable based on net returns and suggested that Raith Samparka Kendra and Krishi Vigyan Kendra has to effort on popularize the Organic Farming system and advised to Farmers about expansion of cultivation with this Farming system to get higher returns.

Nandan and Gami (2015) examined Organic Farming revolution in agriculture. The Organic Farming system knowledge is spreading very slowly in India. Farmers are unaware of these techniques many of them prefer conventional Farming because it gives product early by using chemical fertilizers and pesticides which spoils soil fertility. Crop rotation is major step in Organic Farming with this we can maintain fertility of soil, plant manure, cow and buffalo dung increase the health of soil. Organic Farming provides healthy food and healthy environment by using of Bio-fertilizers. The study explains Organic Farming is costly compared to conventional Farming because extended time period and expensive Organic seeds etc. In India, many Farmers are unaware of Organic Farming system. So, only they are facing problems like fertility of soil, finance and market problem. In the long run comparatively, Organic Farming is better than conventional Farming, because it ensures higher yield and reduction of dependency on external inputs. At the end of conclusion of the study mentioned major reasons for shifting to Organic Farming are health of Farmers and consumer's health. Study mentioned conventional Farming effects on various health and environmental hazards.

Madhusudhan, (2016) focused on the ecosystem. Agriculture is a high investing and low yielding due to more usage of chemicals which are harming ecosystem. For some time, chemicals may give high yield but if it continues soil fertility will lose, that creates adverse effect on ecosystem. For this Organic Farming is best method to protect an ecosystem. Which is Farming without using harmful chemicals, pesticides etc, and also it supports life of soil. And in this method many techniques are there like crop rotation, green manure, and composting. And it provides nutritious food and quality food for public. But it is time taking process and also it requires more labour force for cultivation. In this method training is required for a labour because of this is skill-based work. For future prospects Organic Farming is essential because Inorganic Farming contains chemicals which are causing many diseases. And chemical usage continues lands are becoming useless to do Farming for future generation. To avoid these types of problems practice of Organic Farming method helps. Maintenance of soil fertility and quality food production are possible from Organic Farming.

Nazeerudin, (2016) examined the perception of Organic Farming. Green revolution increases yields with the help of artificial fertilizers, pesticides and irrigation. These cost more expensive and environmental and social problems. For these problems solution is alternative Farming system of Organic Farming. It is increasing rural development and sustainable production. Moreover, people are concern their food quality and safety. The present study is based on purposive sampling method and also done qualitative analysis with case study method. It gives view on perception of Farmers on Organic Farming. It covers four districts namely Mandya,

Chitradurga, Gadag and Raichur and ten Organic Farmers were selected in this study 40 per cent of the Farmers considered Organic Farming is non-use of chemicals in production, 40 per cent opined Organic Farming is eco-friendly and uses locally available materials. Twenty per cent of Farmers were known Organic Farming is farm production, compost and vermi composting using farm materials. The study indicates of perception and understanding of Farmers about Organic Farming. The study gives clarity of Organic Farming and assures bright future for organically produced crops.

Thippeswamy, (2016) examined employment opportunities in Organic and Inorganic Farming. Agriculture sector is most important for generation of employment opportunity and economic development. Some studies have reported higher employment in Organic Farming compared to Inorganic in selected crops. The study is based on primary data which has been collected by field survey and study period is 2010-11. Datas are regarding paddy production of Organic and Inorganic manure. The Study selected Shivamoga district and covers four talukas of district. Study covers total 240 respondents in these 120 Organic Farmers and another 120 Inorganic Farmers were selected. The study also compared both the farmers socio economic conditions and potentialities of employment. Study concluded with findings of there is no association between age group and adoption of Organic Farming manure. Higher level education is influencing factor of Organic Farming system. It is also having conscious about food and ecosystem. Compared to the Inorganic Farming, Organic Farming is more labour-intensive method.

Sharma and Singhvi, (2017) study cover summary of Organic agriculture in India. Advancement of technology in agriculture supports for food security. But every coin has two sides; these all advancement in agriculture sector creates imbalances in ecosystem. And more usage of chemicals, pesticides will create the negative effects on human health and as well environment also. For this Organic agriculture is best solution and going back to our traditional method. It also explains present scenario of Organic agriculture in India. Organic Farming practices many constraints like awareness, separate market, and less yield. The study recommended some suggestions to government credit with lower rate of interests and private companies should invest on Organic Farming. NGOs have to organize training activities for Farmers.

Prajapati and Sharma (2017) examined attitude of Organic Farmers. Organic Farming has better prospects to solve the present problems of conventional Farming method. But also know the attitude of Farmers about Organic Farming. The study conducted in north Gujarat and since last ten years Organic Farming movement is continued in the study area. Many Farmers are adopting Organic Farming day by day because of water scarce. Ex-post facto research design was followed. For selection of respondent's simple random sampling method was used. Information was collected From the JATAN trust and national horticulture mission to evaluate the farmer's attitude about Organic Farming. Attitude scales instrument has been used and 20 statements were there to express their opinion about Organic Farming. The opinion Used statements are strongly agree, agree, undecided, deserve and strongly deserve adoption of Organic Farming practices. In the study 65 per cent of the Farmers had medium level adoption and 13 per cent and 22 per cent had high and low adoption of Organic Farming respectively. Higher level of education and long Farming expenditure can be developing positive attitude towards Organic Farming. An animal's support to the source of Organic manure and it provides subsidiary income to the Farmers. The study concluded with need of training for extension functions on Organic Farming and education, land holding, sources of information, risk orientation, annual income is important in developing favourable attitude of Organic Farming among Farmers.

Yadav (2017) studied the government policies on Organic Farming: Towards healthier nation. In India Organic Farming is practiced from thousands of years. Green revolution has increased food production. But its increased use of more fertilizers and chemicals and also it increases production cost and indebtedness of Farmers. This is a major cause of Farmers suicides in India. These problems created awareness on Organic agriculture among Farmers and policymakers. Organic Farming improves natural resources and soil fertility. And it minimizes cost of cultivation and provides healthy food. Government of India has implemented many programs and schemes for Organic Farming development such as Rastriya Krishi Vikas Yojana, Parampargat Krishi Vikas Yojana, National Project on Organic Farming, and National mission for sustainable agriculture. In 2015-16 government has sanctioned Rs.300 crore for the Parapargat Krishi Vikas Yojana. And this scheme brings 5, 00,000 acres under Organic farm. Rastriya Krishi Vikas Yojana has launched on august 2007 by central assistance and scheme promotes Organic Farming. And it reduces chemical usage. In this scheme soil health card will be issued. Mobile soil testing laboratory are issued 3 crore soil health cards to Farmers during 2014. National project on Organic Farming has launched during Xth five-year plans. And this plan has some objectives like market development activity and awareness programs as well as establishes a model Organic farm. The study suggests of financial support and market development for Organic Farming. Central government has priority on agriculture sector. Recently, researches are gradually moving to crop performance and environment safety. Recently in India's north east state of Sikkim became a completely organic farmer state.

Santhoshkumar et al, (2017) reviewed on Organic Farming. The study has covered Organic Farming, sustainable agriculture and modern agriculture. Nearly 170 countries produce Organic food. World's Organic producers in Asia are 36 per cent, In Africa 29 per cent and in Europe 17 per cent. Organic Farming provides food to present and future generation also. And this is environmentally friendly as well as sustainable Farming system. But modern agriculture involving use of fertilizers and chemicals for production it causes negative effect on environment and this arises health problems also. India is exporting organically produced spices, pulses, fruit, oil seed and vegetables to other country. Organic Farming includes some components like crop residues, crop rotations and vermin composting which is useful for enhance soil fertility. Organic Farming faces many problems like marketing, export restrictions. Study concluded with awareness of Organic Farming is increasing in India day by day. This is also one of the reasons for shifting modern Farming to Organic Farming.

Kumar et al. (2017) reviewed Organic Farming vegetables prospects and scenario. Organic Farming has many techniques like inter cropping and mulching. Fresh vegetable crops are eaten for good health. Organic Farming helps for crop rotation and multiple cropping etc. conventional Farming system creates ill effects on agriculture production, environment and health hazards problems. But Organic Farming has sustainability and environmentally friendly method. It creates addition of quality and nutrients in crops. Organic Farming method is recognized as the best for alternative to the conventional Farming and to achieve higher crop production and maintain a soil quality by Organic Farming method.

Pattanayak and Vyas (2018) studied the rural development through Organic Farming. After green revolution effects on agriculture sector many Farmers has encouraged doing Organic Farming. The study reviewed global and Indian scenario on Organic Farming. The Study observed Chhattisgarh Organic Farming system. In India since independence government has formulated many polices programs and schemes for rural development. These policies and programs are trying to alleviate the rural poverty and malnutrition among the rural population. Over the years we observed the negative effects of fertilizers and pesticides on soil. Chemical based agriculture is not sustainable agriculture therefore, Organic Farming awareness is increasing. In Chhattisgarh yield of tomato increased by use of Organic manure and it also

improved soil health. If rural communities are trying to develop agriculture sector with the help of Organic method there will be social and economic development. Organic Farming contributes sustainable growth of rural population and Farmers of Chhattisgarh improves their life style by utilizing the natural resources.

Chawla et al. (2018) the paper examined rural farm women knowledge about Organic Farming and foods. The study was conducted in four villages of Rajasthan and examined soil types, crops and socio-economic profile. Total 240 farm women were selected, 60 farm women from each village. Data was collected by interview method and result analysis conducted by "t" test. Result was 60 percent farm women had high level knowledge about Organic Farming and 32.50 percent women are having medium level knowledge and only 7.5 percentages of respondents had low level knowledge about Organic Farming. These villagers have adopted Organic Farming method by KVK and in the last 4 years villagers are practising Organic Farming. Maximum farm women have knowledge about Organic foods also. And they are living in Organic Farming adopted villages. Non-Organic villagers had less knowledge about Organic Farming and foods. KVK has to make to educate rural mass about human health, animal health and environment by some special programs.

Sujay et al. (2018) study compared India with other economies on Organic agricultural products. In the world India is fast growing economy, working number of agricultural fields is decreased. Agriculture is playing important role in supplying its products to domestic and international consumers. The case study is based on secondary data. All information about Organic products and Farming practices of India and abroad is collected from the published sources. Such as an international federation of Organic agricultural movements, APEDA and the world of Organic agriculture statistics and emerging trend. The study considers Organic Farming area growth rate and export of the products internationally. As per 2015 utilization of land for Organic agricultural production has increased. In India 8, 35,000 certified Organic product producers are there. Out of 57.8 million hectares of land only 1.5 million hectares of land has utilized for Organic cultivation. In India it has increased comparatively 2010 to 2016. Recently for Organic agricultural products demand has increased as well as exports of Organic products at international level. USA and Europe country demand are more Organic products from India because of aware of Organic Farming. The study concluded with some findings compared to developing economies consciousness of health is more in developed economies and Indian Organic products are getting more demand. India produces basmati rice, fruits, oilseeds, sugarcane etc. In India, Madhya Pradesh, Himachal Pradesh and Rajasthan states are producing more Organic products.

Sharath and Dhananjaya (2019) study analyses Organic Farming in Shivmoga taluk. Now a days cost of cultivation is increasing because of increase of inputs usage in agriculture. At present major issue is whether to continue chemical Farming or environmentally friendly Farming, so this issue made us to think alternative method. Which is good for environment and human? At present Organic Farming is alternative method and it has drawn attention of Farmers and policy makers towards change the Farming method. Study has primary data and secondary data information. The sample size is 20; Out of 20 respondents 75 per cent of them are taken agriculture as their primary occupation. Overall study found that practicing of Organic Farming in the study area respondents faced many constraints. But also, Organic Farming was found well than Inorganic Farming method on account of less cost of cultivation, higher income and better input use efficiency. Organic Farming method has the positive impact on soil and it improves fertility of soil to grow quality products. At Present Organically grown products are getting more demand. There is a need of government initiation for training and awareness programs on Organic Farming.

Ghosh et al (2019) evaluates farmer's socio-economic status and attitude towards Organic Farming. Agriculture plays significant role in the country. Now a day's Organic Farming is widely used method. In Bangladesh Organic Farming adopted since many years ago. Study area is Chapainawabgonj district of Rajshahi division and four Upazila were selected for the study. Organic Farmers list was collected by Upazila agriculture extension office and NGOs. Simple random sampling technique has used and 40 Farmers were selected from list of data. Information collected by respondents with structured interview in these 20 statements were there and five point likert type scale has used for data analysis. And frequency count percentage and mean were used. 75 percentages of Farmers had 2 to 11 years of Farming experience. In total respondents two third of the respondents had medium annual income. 65 percentages of the respondents are working on leased land. Total 92.5 percentages of respondents showed positive attitude because of more output form low input. Many of them are producing Organic fertilizer in their home only. They were collected household waste and cow dung has used in preparation of compost and vermin compost. Study concluded with the Farmers is having positive relationship with their attitude towards Organic Farming. And most of the respondents are found about Organic Farming information from relatives and extension agents. Study recommends to government about loans to Farmers for who are involving in Organic Farming and organizing proper training for Farmers to motivate about Organic farming.

2. Inorganic Farming Effects on Human Health and Environment

Serpil Savci (2013) study Analysis Agricultural Pollutant by use of chemical fertilizers. Consumption of fertilizers in agriculture is increasing throughout the world, its cause's serious environmental problems like water, soil and air pollution. Excessive use of fertilizers in agriculture results large number of environmental problems.

Now day's human beings are aware of fertilizers harmful effects on environment. More usage of fertilizers causes decrease of ground water and surface water level and also it effects to quality of water, it results to most of the water will be not suitable for drinking. At the same time its effects on soil fertility also. More time application of fertilizers can effects on crops quality and spraying of chemical fertilizers on crops effects on air pollution. Finally study reviews improper fertilizer use causes on environment and health problems.

Ogbodo (2013) studied the impact of long-term Inorganic fertilizer application on the soil. Study was conducted in fifteen farms. Each of the farms had used Inorganic fertilizer in the last 20 years and it was conducted in the year 2012. Study area is Ebonyi state of Nigeria, total twenty soil samples were collected and transported in one ice pack to the laboratory. As per laboratory method samples were processed and analyzed. Study detected negative impacts on soils. In the view of soil health there is a need of complementary use of Organic manure, which is increase soil fertility. Study suggests using of Organic manure and mineral fertilizers for correcting soils health and improvement of crops productivity.

Rakesh et al (2013) examined chemical use in Farming effects on health and environmental implications in a rural southern India. Many of the chemical fertilizers have harmful effects on human beings. Safe management of pesticides is essential now days. The study was done in the two villages of Tamilnadu state. In the study area most of the people depend on agriculture only. In Both villages group discussion interview has been done for collecting information. From Keelarsampat village 68 and From Allivaram village 30 Farmers were interviewed. And result was 18.4 per cent of the Farmers store chemical prior to use in the land. 8.2 per cent of them are stored chemicals in their house. 31.6 per cent of Farmers were before taking in to the field, mixed chemical was store in their house premises. Majority of the Farmers would not bathe or clean themselves with water and soap immediately after use of pesticides in the field.

Study found that both the village people were use chemicals in the last 30 years. And most of the farmers did not have good knowledge about pesticide usage. At the time of application of chemical fertilizer personal protection equipment were not used. Current study revealed that poor awareness of harmful effects of agrochemicals among the Farmers. Study suggests that creation of awareness and providing education on pesticides use and personal protection by chemical application is required.

Sharon and Nishanthlalu (2014) Study examines effects of chemical Farming on Farmers. Many of the Farmers have adopted chemical Farming and they are using chemical fertilizers and spraying pesticides to grow crops and they are unaware of the fact that its harmful for their life. Most of the Farmers are suffering with skin allergies and diseases. Study has used descriptive method to collect the information. Major objectives of research are ill effects of chemical agriculture on Farmers. Non probability purposive sampling method has been used and data collected with the help of Interview schedule. Total 30 respondents are from Kilkundaiyar Village, Thiruvallur District, Tamilnadu.

The Study found that 100 per cent of the respondents have used Urea, 67 per cent of the respondents used fertilizer of complex, 50 per cent of the respondents used DAP, 40 per cent of the respondents used Potash, 30 per cent of the respondents use Zinc sulphate and 20 per cent of the respondents used ammonium chloride in their farm lands. Farmers who work with chemicals in their land they were facing cough, headache, itching, burning sensation and fell of breathless.

Researcher has mentioned some suggestions to prevent of Farmers health. It is essential to educate the Farmers about the Organic Farming and benefits of money, health and environment. And NGO's and Government should encourage them by shift to Organic Farming.

Anitha Kumari et al (2014) examine the adverse effects of chemical fertilizers on human health and environment. Excessive use of fertilizers and practices causes to harm on environment and human population. People take pesticides through food items, fertilizers applied on soil cause to water level and food grown with fertilizers causes to health hazards in animals and human beings. Like nervousness, lungs infection, cancer, Asthma, birth defects, bone diseases, kidney problem and nose, throat and eye irritation.

Therefore, there is necessity to reduce the dependence on chemical agriculture. So, study suggests Organic Farming method, which is eco-friendly, Farming system. Uses farm wastes, animal manures and green manures. Study concludes that there is an urgent need of shifting to alternative Farming method and eco-friendly fertilize production is necessary for development of agriculture sector.

Deviprasad et al (2015), the paper presents survey of pesticides usage pattern in four districts of Karnataka. The study covers use of pesticides to control insects, pests and diseases in the field crops. Study was conducted in the four districts of Karnataka namely Belgaum, Chamarajnagar, Gulbarga and Mandya. To collect a data questionnaire was used and details were collected on pesticides availability, types of pesticides, Pattern of Cultivation and Frequency of Pesticides application in the study area.

Majority of the Farmers had only primary education and had no formal education on pesticides. Most of the Farmers reported that they were using synthetic pesticides. During survey it was observed that for a single crop multiple time pesticide were used. And Farmers were very casual in terms of pesticides storage. Many of them were stored outside of their home along with all equipment's.

At the time of survey in the consultation with Farmers it was found that a few of them know the harmful effects of the pesticides on human beings. And some are reported after pesticides spraying day's problems of eye irritation, berthing problem, vomiting and skin problem.

The result of the survey in four districts was found that varieties of pesticides were used for different crops like vegetables, rice, maize, Sugarcane, Groundnut and pulses. And it clarifies lack of knowledge among the Farmers about proper pesticides application and personal protection. And also, survey points the need of awareness among the Farmers on environmental issues includes health Problems due to usage of pesticides.

Sharma and Singhvi (2017) reviewed the effects of Chemical Fertilizers and Pesticides on Human Health and Environment. Agriculture is providing present food need to the society. Use of pesticides has been increased of production and productivity of agricultural crops. Many studies have overview on use of agrochemicals and their effects. It has been found that many Farmers are not using the safety masks and gloves during the spraying pesticides on farm lands. At the time of pesticides spraying they are transmitted directly or indirectly into corns and vegetables that effects to the human health. Now it is a need of alternative method like an Organic Farming for proper human health. Study suggests that a proper training should be given to farmers regarding Organic Farming.

Bishnoi (2018) reviewed Agriculture and chemical fertilizers. Agriculture pollution is one of the major problems in our Farming system. Agriculture is linked with nature. Adopting good Farming practices can protect water quality and soil quality. More usage of Chemical fertilizers Impact will be in negative way. Soil is most important fundamentals of earth and it plays important role in agriculture production. For sustainable agriculture soil management is one of the essential elements. Use of fertilizers has resulted negative on water levels and agricultural air pollution comes mainly from pesticides use. Study found that agricultural opportunities should be favorable to environment, like soil health, water quality and air quality. We should work with nature not against to nature. More awareness about the impact of chemical fertilizers is essential. Study suggests that to government participation is most important and good policy making with implementation also important to agriculture sustainability.

Gyawali (2018), evaluate the pesticides uses and its effects on health and environment. The report is based on secondary information. In modern agriculture pesticide is one of the most important inputs and its use is increasing annually. The study area is Nepal. Consumption of pesticides in Nepal is very low as compared to other countries. To control and kill pests Farmers are using pesticides, but it causes negative effect on health as well as environment. It demands ecosystem and surface of ground water level. Overuse of chemical fertilizers and pesticides have effects on the soil also. Pesticides use has significant risk on human health.

Dutta and Bortamuly (2018) reviewed pesticides effects on health and environment. To prevent an agriculture weeds, fungi or other harmful pest, using a pesticide is common practice, but over use and misuse of pesticides has major immense health problem and environmental loss. The use of pesticide results health issues like, cancer, birth defect, liver and kidney problem etc. Researcher reviewed many journals and Books with the major objective of effects of pesticides on human health and environment. Effects of pesticides include skin irritation, abdominal pain, itching, vomiting, and blindness etc. and also usage of pesticides will affects on environment in long term also. Persisting pesticides causes hazards on ecosystem. And Study concludes with those problems are accruing due to the improper knowledge of pesticides use. There is a need of conducting training programs for Farmers regarding consequences of pesticides use.

Satya sai et al. (2019) examines the knowledge and perception of Farmers regarding pesticides usage. Many Farmers are extensively using pesticides for pest control in agriculture sector.

Their usage of pesticides may lead to higher exposure resulting in adverse health effect. Study tries to evaluate the knowledge, attitude and practices regarding pesticides usage.

Study was conducted in the village of Kaivara, Chickballapur district of Karnataka state. Data was collected by face to face interview with questionnaire. Total 170 sample size was there in that majority of them were males (69.01 per cent) while female was (30.99 per cent). Most of the Farmers learnt regarding pesticides by retailers. Study reported that. 75.443 per cent of the farmer knows the ill effects of pesticides and 24.57 per cent were not aware of this. At the time of use of pesticides Farmers reported health problems such as headache, eye irritation, breathing difficulties and skin rashes. When such symptoms are seen in many of them, they consulted a doctor. Majority of the respondents reported that used pesticides containers were thrown in to open places and this is an unsafe practice of Farmers.

The major finding of the study is, about the need of pesticides safety education along with training for Farmers about how to use pesticides and how to get personal protection, as well as how to control the adverse effect on environment.

Irawan and Antriyandarti (2021) examined the fertilizers application, climate change and rice production. Inorganic fertilizers continue effects on fertility decline of soil. For long term application of fertilizers can harm rice productivity. Pesticides are commonly using for control of pest and fungal disease. Study was conducted in central java and East java provinces and selected 4 largest rice producer districts, Namely Cilacap, Grobogan, Lamongan and Jember. Total 324 samples were selected for the study; Farmers used several chemical fertilizers in the study area. In the short term, initially the use of pesticides and chemical fertilizers will increase rice production but not in the future production. Study concludes with temporarily rice production can increase with the use of chemical pesticides in some seasons only. But In the all-season rice production can increase with the use of Organic fertilizers.

Khan et al (2020) asses the health risk due to pesticides presence in fruits, vegetable, soil and water. Most commonly consuming food are fruits and vegetables. Study is based on Primary data. Information gathered from field visits. Three types of samples were collected from Lahore. Fresh fruits, vegetables and soil samples were transported to the laboratory for analysis and examined. After examination of samples there were confirmed and found the presence of pesticides in water and soil also. Totally use of pesticides is risk for human health and environment. The study reveals the presence of pesticides in fruits and vegetables is significant health risk towards consumers.

Balkrishna et al (2021) examines the chemical fertilizers and Pesticides effects on human Health and environment. In 1960 Green revolution was started and it involves the yielding verities of grains with the use of chemical fertilizers. More use of Chemical Fertilizers effects on several levels. In India huge amount of chemical fertilizers are used in agriculture sector. It causes on water pollution, Air pollution and soil pollution. Study suggest that government has to implement some effective polices for use of bio- pesticides with Organic Farming. Proper training, awareness programs conducting and proper monitoring on use of chemical fertilizers can reduce harmful effects on environment and human health.

3. Comparison of Organic and Inorganic Farming cost and various aspects of production

Charyulu and Biswas (2010) study reveals Organic agriculture is developing rapidly, and attracted recently and offers some solutions to present problems of agriculture sector. In India, conversion of conventional to Organic Farming interest is increasing. The study has selected four states of India. Such as Gujarat, Maharashtra, Punjab and Uttar Pradesh states. From each state 15 0rganic and 15 Inorganic Farmers were interviewed about their cost of cultivation. The study duration is 2009-10 and Crops covered respectively cotton, sugarcane, paddy, wheat. In Uttar Pradesh and Maharashtra most of the Organic Farmers are practicing zero-budgeting or natural Farming concept in their farms. Data Envelopment Analysis (DEA) was used for analyse the efficiency of the Farmers system. The study attempts to assess the different crops and states. Result was mixed response and cost of production is lower in Organic Farming of cotton

compared to conventional Farming. Government role is most important in motivating the Organic Farming in the country. Study suggests for creation of market and demand for Organic products and announcement of premium prices for Organic food crops. Finally, quick certification process has be too started by government.

Charyulu and Dwivedi (2010) reviewed of Economics of Organic Vis **-** Vis Conventional Farming. India has lot of potential to provide all type of Organic products. Organic Farming system has alternative to offer some solutions to the problems of agriculture sector. Government also initiated some Programs like National Program for Organic Production (NPOP) and National Project on Organic Farming (NPOF) for development of Organic Farming in the country.

Present study has purposively chosen four state of India, namely Gujarat, Maharashtra, Punjab and Uttar Pradesh state. From each state 30 Farmers samples have been chosen, out of 30 Farmers 15 from Organic and 15 from Inorganic Farming were interviewed and collected information of cost of cultivation of major crops. The study Pertains to details of cropping year of 2009-10 and collected cost of cultivation of paddy, wheat, cotton and sugarcane crops. The Result showed mixed response. Generally Organic Farming production system has low productivity levels and also it requires more number of labours.

Overall result concluded that the cost of production is lower in Organic Farming compared to conventional Farming. And Study suggested some points to government, firstly making marketing channels, and Good prices for organically grown crops and creation of demand by awareness about Organic Farming crops by conducting programs.

Umar et al (2011): analysed sesame production under Organic and Inorganic fertilizer applications. Sesame is cultivated on over 80,000 ha across in Nigeria. Two state are producing highest sesame in Nigeria respectively Benue and Nasarawa. It is a popular crop among rural Farmers, Because of more demand for sesame at local and international market. Animal manure is cheaper fertilizer to Nigerian farms. For the study multi stage sampling procedure has been used. Total 96 Farmers were selected for the study, in that 48 from Organic fertilizer users and 48 from Inorganic fertilizer users. Primary data were collected by structured questionnaire. Study period is 2008-09. Data was collected on production inputs farm size and educational status. Total Factor Productivity analysis and Ordinary Least Square Regression method was used for data analysis. Study confine that Inorganic fertilizer application forming return is higher than Organic fertilizer application. Return (27 per cent) over the sesame production farm size, education and Farming experience factors are influencing to productivity level. And study recommends encouragement and education to the Farmers; it will enhance his management skill and productivity in Farming.

Seufert et al, (2012) examined the yields ratio between Organic and conventional agriculture. Global food system needs major changes because of growing population and increasing demand for high calorie food items. Conventional Farming provides sufficient yield. Meta-analysis technique was used for comparison of Organic and conventional agriculture yields. And study reporting total 316 Organic to conventional yield comparisons on 34 different crops. This analysis shows that Organic yields are lower than the conventional yields. But good management practices and particular crop can be reach nearly conventional yields. In first year an Organic yield are low but after some years gradually improves the yield. In Organic yields water relation is most important with soil management. Organic agriculture is best tool for sustainable food production and this provides environmental benefits.

Sudheer (2013) examined the Organic versus chemical Farming. Agriculture is the important sector for Indian economy. For more Production of food grains government has launched many programs. Most of the Farmers are dependent on chemical fertilizers and pesticides. The

negative effect of the use of chemical fertilizers includes a reduction of productivity. For this problem proposed remedy is Organic Farming method. Methodology of paper is that study based on primary data. Multi stage stratified random sampling technique was used for household selection. Andra Pradesh is the study area and three major crops namely Cereals, Pulses and oilseeds are selected for the study. Totally from Organic 350 and from Inorganic 200 Farmers household selected and the cost of cultivation and returns from crops related information has been collected. The cost of cultivation constitutes the major share by pesticides only next hired human labor, Machine labor and seeds cost. Finally study analysis that government has to provide subsidies and support for Organic Farming to get good prices and separate market for organically grown crops.

Overall, the study found that Organic Farming profitable compared to Inorganic Farming and most of the Farmers believe that Organic Farming improves soil fertility. The researcher suggests that to government, announcement of good prices for Organically produced crops, conducting an awareness programs and subsides for Organic Farming inputs and separate market should be establish by government.

Thippeswamy (2013) examined the use of chemicals harms the existing soil, plants, animals and human health. He believed that quality of Organic food and people are exploring and supporting for Organic Farming. This is environment friendly method and economic method. This study is based on secondary data; it includes some reviews of articles. The study reveals the food produced with the manure of Organic Farming will provide tasty and nutrition foods. The consumption of Organic foods reduces diseases like heart attacks, strokes, cancer, and many other diseases. Hence, people are aware about food safety. The study recommended to government about awareness of Organic food, separate market, Support prices for nutrition food. Recently world Organic foods consumption has increased. And the study has not covered cost of production, Productivity, yields and statistical data.

Alexandra (2013) study examined Organic Farming versus conventional Farming. He has collected both the Farming information. On the basis of collected information advantages and disadvantages of Organic system has compared. Organic agriculture differs from conventional agriculture and its uses chemicals for production, but in Organic manure Organic wastes are used for production. And this is comparatively more labour-intensive system. Yields differ from both the Farming system. Organic Farming encourages the uses of natural fertilizers but in conventional Farming synthetic fertilizers are used, which effects on health and soil quality. Some Farmers are not giving importance for financial and profitability because of personal values of health and social issues. They are having personal satisfaction with Organic Farming. Finally, study has expresses there is a match between yields of Organic and conventional Farming with respect of some effective management in Farming.

Tholkappian and Rukmani devi (2013) examined the cultivation of turmeric under Organic and conventional Farming. Mainly turmeric cultivation is growing in Andhra Pradesh, Tamil Nadu, Karnataka, and Maharashtra. Turmeric grown under the rain fed and irrigated conditions. The Study period was 2010-11 in the state of Tamil Nadu district of erode. The study is purely based on primary data, and collected data from both the growers. Study is related to cost of cultivation and grower's opinion about Organic agriculture. Sample size was 60, in this 30 form Organic Farming system and another 30 from conventional Farming system. Cobb-Douglas production function has been used for result and discussion. In the study area, Organic turmeric cultivation is quite successful compared to conventional Farming. Under Organic Farming turmeric cultivation is costing Rs.33630 per acre, and it is Rs.1203 per acre more cost of cultivation under conventional Farming. The Organic Farming yield will be low but it is compensated by the higher price. The study found that Organic Farming requires more labour

and it conserves the soil and water resources and increases the farmer's income and livelihood security.

Padma Annakamu (2014) Study tried to compare an Economic Performance between Organic and Inorganic Farming. Day by day for agricultural products demand is increasing therefore productivity of agriculture sector has to be increased by available resources. Study is based on primary and secondary data. And Study was undertaken in four districts of Tamil Nadu State Namely, Vellore, Tiruchirapalli, Cuddalore, and Erode. For the selection of sample farmer's researcher were used multistage stratified sampling method and total 407 sample Farmers were selected for the study. Out of total samples 141 Farmers are from Inorganic Farming and 266 are from Organic Farming. Study covers socio- economic factors of Organic and Inorganic Farmers. And Cost of cultivation varies with Farming methods. Study found that Organic Farming cost of cultivation was less than that of Inorganic Farming. Net return is high from Inorganic Farming and less return from Organic Farming. Study suggest to government for provide a training for Farmers with demonstration and land certification process must be simplified.

Mohan Kumar et.al (2017) studied cost and return of Ragi and maize cultivation in Karnataka. Organic Farming is environment supportive method. The study explains in spite of the reduction of crop production in Organic Farming will be compensated in net profits to Farmers. Due to availability of premium prices on Organic crops. In Organic turmeric and cotton production the most important constraints are unavailability of labour. To promote a sustainable agriculture best strategy is Organic agriculture. Study is purely based on primary data collected from sample Farmers who are practising the Organic ragi and maize Farming since 2007. On the basis of details calculated cost and returns of production. Simple random sampling was used. Purposively Chamarajnagar district of Karnataka state has been selected. In that four villages were selected and 45 farmers form Organic Farming and 45 Farmers from conventional Farming were selected to collect information. Benefit cost ratio analysis has been used. Cost of cultivation of ragi from Organic Farming per acre was Rs.24817 and from conventional Farming is Rs.17719. Ragi cultivation variable cost percentage accounted under Organic and conventional Farming respectively 73.84 and 69.30 per cent to the total cost. Return from ragi cultivation is Rs.3088.73 from Organic and Rs.2572.3 which is negative under conventional Farming. B: C ratio for ragi production under Organic and conventional Farming was 1.08 and 0.72 and research paper covers cost of cultivation of maize also. Maize per acre production cost was Rs.30299 and Rs.23083 under Organic and conventional Farming respectively. The total variable cost percentage is 75.53 and 68.01 under Organic and conventional Farming as well as returns from cultivation under Organic and conventional maize production was Rs.41436.79 and Rs.276797.90 B: C ratios were Rs.1.37 and Rs.1.12 under Organic Farming and conventional maize Farming. This implies economic viability of both the Farming systems. The study concluded with Organic Farming concerns on quality and sustainable and profitable livelihood for rural community. The result showed Organic Farming is more profitable than conventional Farming. Study also found that Farmers have to give time for conversion from conventional to Organic Farming. Government needs to create awareness on Organic Farming by making some polices.

Charles (2018) compares the Organic and Inorganic Farming. Since thousands of year's Organic Farming was practiced in India. Study has specific objectives of creation awareness among the people about Organic food products are good for health. In the study simple random sampling method were used. 50 samples farmer were chosen from Organic and 50 from Inorganic samples were interviewed. The interview schedule covers demographic characteristics, economic conditions and social conditions impact of Organic Farming in selected area. From the analysis of both methods found that present day market potentials.

Respondents in the age group of below35 year were practicing Organic Farming. Especially who don't have any formal education they are practicing Organic Farming.

The Study found that respondents of Organic Farming have not done soil testing. Many have attended Organic Farming training programs, even though they are practicing Inorganic Farming, because there is more income in organic farming. There are no organizations of Organic Farming in Tirunelveli, but there are societies for Inorganic faming. Paper suggests that government and NGOs should take good steps to ensure smooth agriculture practice.

Krause and Machek (2018) examined the financial difference between Organic and conventional farms. Increasing the awareness of environment and soil fertility maintenance Organic Farming is becoming popular. In European Union and Czech Republic share of land covered by Organic farms are growing. Sample size of study was 291 Organic and 4045 conventional Farmers over the period of 2009-2013 and student t test and regression analysis has been used. European countries share of Organic agriculture land is increasing compared to conventional Farming. Organic Farming cost of structure is different in this higher labour cost can be assumed because of Organic Farming is more labour-intensive system. In the comparison of the yield of Organic Farming is lower than yield of conventional Farming. Another feature is price; but customers are ready to pay more for Organic products compared to conventional products. Subsidies are paid by rural development programs and subsidies plays major role in Organic Farming. The study concluded that Organic farms had better profit and lower asset turnover.

Krishnia and Rajwat (2020) study analysis the comparison between Organic Farming versus chemical Farming. Agriculture is the process of production of food grains. At Present there is issue of whether continue the chemical Farming or go back to traditional environment friendly, like Organic Farming. Study area is Jhunjhunu district of Rajasthan state. Study compares the quality of food produced under Organic and Inorganic Farming. Paper is based on primary data. In the study major three crops have been selected namely Cereals, Pulses and oilseeds. Total 100 Farmers were selected from Chirawa, Surajgarh and Jhunjhunu Gram Panchayat.

Overall result revealed that the Farmers under Organic and Inorganic Farming achieving profits, but profit earned by the Organic Farming are high. Therefore, it is necessary to take innovation steps to develop an Organic Farming.

Majumdar and Sengupta (2021) study analysis between Organic and Inorganic Farming. Agriculture sector faces many challenges regarding to fulfill food demand and mitigating environmental challenges. Excess use of chemical fertilizers is very much dangerous to health. Study area was Ranchi District of Jharkhand state. For Organic study Tirlakocha village and for Inorganic vognabera villages have selected. Stratified Random sampling Method was used for data collection. For the study, primary and secondary sources were used. In the study more no of Farmers belong to small and Marginal categories. Overall study explains the rate of livestock is higher in Organic village compared to Inorganic village. Because of Organic Farming fully depends upon the livestock like cow, buffalos and poultry etc. Study found that the Farmers of Inorganic are not willing to enter in Organic Farming. In the Organic village it is observed that trained Organic Farmers became successful.

Conclusion

Most of the studies reveal that Organic Farming and Inorganic Farming impact on Agriculture Sector, like generating more profit; Improvement in soil quality, reducing fertilizers use and controlling environment hazards and improving quality of crops and development of farmer's Socio-economic status, whereas a few studies conducted on cost benefits by using an Organic Farming with naturally available resources. The present review concluded with benefits of organic Farming and effects of chemical fertilizers on human being and environment.

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Chapter - 3

Organic and Inorganic Farming in India and Karnataka

Introduction

This chapter contains the performance of agriculture in India, its background of organic farming and agriculture in Karnataka. It throws light on latest developments, challenges in agriculture and also policies of government for the agricultural development. The Chapter includes Organic Farming method with the present scenario. It includes Organic Farming operational structure and centres in Karnataka.

Performance of Indian Agriculture

Indian Agriculture

The agricultural sector is an important arena playing its important role in the development of country's economy. Agriculture not only caters to the food requirement of the nation but it also leads to the generation of employment in various levels. As it supports in the poverty alleviation, it helps in the overall economic growth of the country. The agricultural sector at one side has the goals of food security and at other side it leads challenges in the agrarian sector. Now there is a need to concentrate on the overall economic well-being of the Farmers. In 2015, the hon'ble Prime Minister has renamed the Department of Agriculture and Corporation as Department of Agriculture, co-operation and Farmers Welfare. This indicates that agriculture sector is not only for the uses of resources like water, soil but also for the social and economic well-being of the Farmers there is also a need to give managerial solution to the problems of the Farmers.

The welfare of the Farmers needs to be the primary orientation leading to enhancement of income and employment. This agriculture plays a pivotal role in poverty alleviation. For the sustainable growth of agriculture, natural resources play an important past. The recent Socio-economic programs of the government focus on the enhancement of farmer's welfare that is improvement of farmer's employment, novel agricultural practices, rural infrastructure development soil health, utilization of insurance schemes, better investments and in total reducing the risk in agriculture leading to a sustainable growth. As per the recommendations of the 14th Finance Commission, the government provides autonomy to states to create their own decentralized agricultural policies according to the local scenarios. The government has been trying to create agri-value chains by making the way to 'near-farm' jobs and procuring food grains directly from Farmers. This will help the Farmers to get better rates for their crops and make the consumers to avail good grains at cheaper prices.

Growth of Agricultural Domain

There was high volatility in the agricultural GDP in 1991. The growth of agriculture and allied sector is one of the major indicators of development of primary sector.

Table-3.1 Agricultural Sector Growth rate during different Five-Year Plan Periods
(In Percentage)

Eighth Plan (1992-96)		**Ninth Plan (1997-02)**		**Tenth Plan (2002-06)**		**Eleventh Plan (2007-12)**	
Growth of Gross Domestic Product							
Overall	Agriculture	Overall	Agriculture	Overall	Agriculture	Overall	Agriculture
6.50	4.80	5.70	2.50	7.60	2.40	8.00	4.10

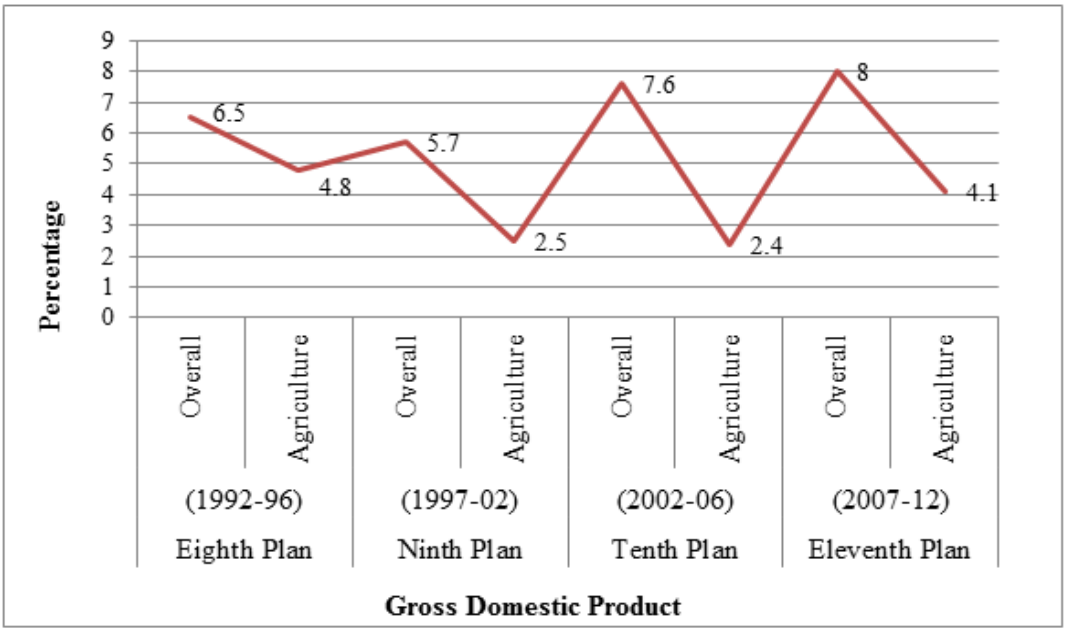
Source: State of Indian Agriculture 2015-16

It varied from 4.8 per cent in 8th Five -year plan (1992-96) to 2.4 per cent in 10th plan (2002-06) which rose to 4.1 per cent in the 11th plan (2007-12). In order to evaluate the performance of agriculture sector in the last 10 years, the period from 2004 to 2008 may be considered as the first phase and 2008 to 2014 as the second phase. If the growth rate was Five per cent in 2004-08 it came down to Three per cent in 2008-2013. But there was a growth of economy from

Nine per cent from Seven per cent during the same period. The agricultural GDP was only 0.69 per cent. The volatility in agriculture was due to variation in Manson. As many small Farmers are dependent on agriculture variation in the climatic conditions become a course of worry for the policy maker too.

The Given below figure gives the proper explanation of trend of agriculture and Overall GDP growth rate during the different five-year plans.

Fig-3.1 Growth Rate of GDP by Five -year plans (In Percentage)



Source: State of Indian Agriculture 2015-16

Agricultural Production

The lessons from the success and failure of the previous policies made the government to frame new strategies. The success of Green Revolution increased the production of food grains but was restricted to a fewer States like Uttar Pradesh, Haryana and Punjab mainly restricted to wheat and paddy crops.

Agricultural Performance

The greater production of grains from 196.81 million tonnes in 2000-01 to 265.04 million tonnes in 2013-14 led to export of food grains. If bad monsoon affected kharif crops in 2014-15, excess rain hit agriculture in March 2015. Various trends in the production of crops for 2014-16 discussed here below:

a) Rice

Owing to the initiatives like better crop verities, irrigation methods, support prices and in time procurement by the government made the enhanced production from 93.96 million to 106.65 million tonnes from 2006 to 2014. But the following year it showed the decline to 104 million tonnes. The yield of rice in other States is less compared to Punjab. The Production of rice Kg per hectare rises from 2,131 Kg to 2,390 Kg from 2006-2015.

The government is also guiding and motivating Farmers to use modern methods of cultivation, introducing high yield varieties, and hybrid seeds and making better marketing facilities. Direct seeded rice transplanted rice cultivation, alternate welting and drying, system of rice intensification are various techniques suggested by research scientists to various types land areas.

b) Wheat

In 2006-07 the wheat cultivation was 27.99 million hectares and in 2013-14 it got increased to 30.47 million hectares increasing the total production from 75.8 million hectares tones to 95.85 million tonnes. Improved irrigation facility, better quality of seeds, involving new variety etc. resulted in the enhanced food production. The production of wheat in 2006 was 2708 Kg/hectares but the same went up to 2872 Kg/hectares in 2014. The increase in the production was due to increased seed replacement rate. Technological interventions, maintaining optimum sowing time, cultivating rust resistant varieties like DPW-621-50, PBW-550, DBW-17, HD-1105 etc. even keeping adequate space between the lines also led to increased production.

c) Coarse Cereals

Barley, Jowar, bajra, ragi constitutes traditional food for many Indians. These crops are grown in the areas with good rain in the States like Karnataka, Maharashtra, Tamilnadu, Madhya Pradesh, Rajasthan, Gujarat and Haryana. From 2006 to 2015, the production increased though there was a decline in the area of cultivation. The increase was up to 1729 Kg/hectares from 1180 kg/hectare in 2006-07.

Millets are grown in the areas which get the rainfall of 200 to 600 mm where it is difficult to grow other crops like rice and wheat millets are more environments friendly and stronger for climatic changes. These grains have high nutritional value with protein, fibre and mineral elements.

The use of improved technologies, minimum support prices give greater productivity of cereals. For developing post-harvest technologies and to increase linkages centres for excellence has come into existence at the Directorate of Sorghum Research. These centres try to increase awareness among people about use of millet as bakery and food product.

d) Pulses

The 30 per cent of the area under cultivation and 25 per cent of the world production is done in Indian Pulse agriculture. Various pulse crops like chick pea (49 per cent), pigeon pea (16 per cent), leafless (7 per cent), mungbean (5 per cent), field pea (5 per cent), urdbear (4 per cent) are grown in India and Madhya Pradesh itself contributes to about 27 per cent total pulse production, and even the States like Rajasthan (15 per cent), Maharashtra 10 per cent, Uttar Pradesh (8 per cent), Andhra Pradesh (7 per cent) also contribute for the total pulse production.

There is a considerable increase in the pulses production from 14.2 mn tones to 19.25 mn tones from 2006 to 2014 on account of increased production of urdbean and gram. Even per hectare production increased from 612 kg/hectare to 744 kg/hectare from 2006 to 2013. The States like Himachal Pradesh, Chhattisgarh, Bihar, Jharkhand, and Madhya Pradesh showed major increase in the pulse production.

The allocation of 50 per cent of budget under National Food Security Mission towards pulses shows the priority of the government. Even the worth Indian States with hilly areas were encouraged to grow pulses. Even emphasis was laid on intercropping with many commercial crops, oil seeds for the production of pulses. The organizations like NFSM, INM, and IPM make the interventions like certified seeds, improved technology, water utilization, project management etc. to enhance pulse production. During the agriculture season of 2015-16, there was a minimum support price MSP of Rs.4,425, Rs.4,650 and Rs.4,425 per quintal for the, moong and urad pulses respectively and also Rs.200 per quintal was given to the Farmers as the encouragement.

e) Oil Seeds

India's agro-ecological condition supports the growth of groundnut, mustard soybean, sunflower, safflower, sesame, and non-edible seeds like castor and linseed. The oil seed crops

are important for the small Farmers and India is the 4th largest producer of oil seeds and account for 260 lakh hectares of production with 13 per cent of gross cropped area and contributes to 3 per cent of Growth National product. On account of the growing demand for oil for about 21,06 million tonnes in 2013-14, India started importing 14 million tonnes of oil, especially palm oil and palmolein oil about 78 per cent ad soybean oil and sunflower oil at 10 per cent and 9 per cent respectively. Vegetable oils from cotton seeds, rice bran oil, coconut oil production has increased in the recent years. Oil Palm plantation has begun in 1970s and 2.69 lakh hectares in 2013-14. Andhra Pradesh, Karnataka, Kerala, Orissa, Gujarat, Maharashtra, Goa and grow oil palm in India. From April 2014, National Mission on oil seeds and oil palm – NMOOP came into existence, by the restructure of Integrated Scheme of oil seeds, oil palm and Maize-ISO POM and Tree borne oilseeds. And TBO and Oil Palm Area Expansion OPAE for enhancing oil production from 28.9 million tonnes to 35.8 million tonnes. Increasing irrigation coverage, use of technology, use of machinery result for enhance of production.

f) Sugarcane

Sugar cane is one of the cash crops amounting to 5 per cent of the total value of crops covering about 2.8 per cent of gross cropped area. After Brazil, India is the second largest producer of Sugar cane. 361.04 mn tone of sugar cane was produced in 2011-12 and 71.67 tonnes per hectare was produced during the same period but was reduced to 69.86 tonnes/hectare in 2014-15. National Food and Security Mission a centrally sponsored scheme was implemented in the States like Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Madhya Pradesh, Orissa, Punjab and Telangana from 2014-15. Under NFSM CC Rs.800 lakhs was allocated for sugar cane agriculture with the use of inter cropping single bud chip technology, production of tissue culture and bio agent laboratories.

g) Cotton

In India cotton is grown in Karnataka, Gujarat, Maharashtra, Andhra Pradesh, Telangana, Hariyana, Madhya Pradesh, Punjab and India are the largest cotton producer consumer and exporter of cotton in the world. In the last decade, there is a significant increase of cotton production of 359 lakh bales from 164 lakh bales from 2013 to 2004. Even the per hectare output got increased from 403 kg/hectare in 2009 to 510 kg/hectare in 2013.

h) Jute

India being the largest producer of jute contributes to 50 per cent of world's production. Jute was estimated about 10.93 million bales in 2014-15. West Bengal, Bihar, Assam and Odisa account for 99.29 per cent of jute production. West Bengal's 77.91 per cent of production and it covered 71.28 per cent in the same year 2014-15. Rs.700 lakhs was given in 2014-15 and Rs.1716 lakhs were allotted for the development of jute under the NFSM.

i) Horticulture

Indian agriculture is also driven by horticultural products. India grows 277.7 million tonnes out of 23.2 million hectares of land area. There is a difference in the growth of food crops and horticultural products in terms of land requirement, their nutritional value etc. it has been a known fact that horticultural Farming is more profitable. From 2004 to 2014 there is an increase of 34 per cent. Mission for North East and Himalayan States CHMNEH and National Horticulture Mission have made the great production of horticultural products. These organizations have been laying stress on protected cultivation, small area irrigation; better marketing approach has laid foundation for greater growth.

j) Fruits

Out of all the horticulture productions fruits account for 31 per cent with the area of 6.3 million hectares in 2013-14. There was an increase from 5 million hectares to 6.24 hectares from 2004 to 2014. Fruits like mango, banana, papaya, guava, grape, sapota, and pomegranate, Pineapple

are grown in India. 13 per cent of total world's fruit production is produced in India. Among the States of India, Maharashtra leads in food production with 12.22 per cent of total production during 2014-15. Andhra Pradesh, with 10.57 per cent Uttar Pradesh with 10.03 per cent, Gujarat with 9.27 per cent follows Maharashtra in food production. Among all fruits, banana accounts for 33 per cent and Mango with 21 per cent, Citrus fruits with 14 per cent are among the important fruits. Himachal Pradesh and Jammu and Kashmir are known for apple, plums and pears production. If one looks at the overall fruit production scenario of the world, India stands in the 2nd position with the largest producer of Mango, Banana, Pomegranate, Sapota etc. Though China is the largest fruit producer, India fruit productivity is better. The quality enhancement in the planting from nurseries and better packing methods have enhanced for the quality output. About 189 gm / person / day is the per capita availability of fruits for enhancing nutritional value.

k) Vegetables

India produced 167 million tonnes with 17.6 tonnes hectare in 2014-15. Compared to 2001, there was a leap of 66 per cent in the total production of vegetables in 2015. And Potato, tomato, onion, brinjal, cabbage, beans, chillies are the commonly grown vegetable in India West Bengal is the largest producer of vegetables of about 16 per cent of total production. Uttar Pradesh produces 14 per cent, Bihar 8.6 per cent, Madhya Pradesh 8.75 per cent, Gujarat with7 per cent, Karnataka with 5 per cent are the leading States in vegetable production. Potato is the most commonly grown vegetable followed by onion, tomato, brinjal and cabbage.

In India about 357 gm/ person/ day is the per capita availability of vegetables. India is next to China in vegetable production with the first and Second position growing Okra and brinjal respectively. In the production Potata and tomato, India stands on the third position.

l) Spices

India is the largest producer of spices with the main production of spices like, pepper, chillies, ginger, turmeric, garlic cardamom etc. Gujarat and Andhra Pradesh stand in the top 2 positions of spices production with 18 per cent and 14 per cent respectively. About 5.7 million tonnes of spices are produced from 3.2 million hectares of land. In the last 9 years, India has been producing about 30 per cent total spice production and garlic amounts to 23 per cent of spices.

Spices Sector- Though there is less quality of production but the value of spice is very high in terms of monetary returns compared to world's production of spices. India stands on a lower note and even its prices depend on the fluctuation in the spices prices over the world.

m) Flowers

The floriculture is one of prominent sector in employment generation especially to the women. 0.24 Million hectares of India grows flowers. With the growth in the demand for the export of cut flowers India too making good progress in growing cut flowers of roses, gladiolus, carnation lilium etc.

Indian States like West Bengal, Karnataka, Andhra Pradesh, Tamil Nadu, Odisha are known for congenial atmosphere for flower growing. Even Jammu Kashmir and North Eastern States do not lag behind in growing flowers.

Natural Resources in India

The agricultural sector of India needs to meet out and the demand of 17.5 per cent of World's population with having only 2.4 per cent share of land area of the World and 4.0 per cent of fresh water resources access. This causes various challenges of natural resources management. The total sown area remains the same as 140 million hectares which will remain as same. The fact is that 120 million hectares of Indian soil is degrading year by year, which is a matter of great concern.

In the context of food security and environmental quality, it is at most important to pay greater attention to natural resource management. On account of ever-increasing demand for water resource, India is catering to 66 million hectares of irrigated land out of the total potential of 140 million hectares. This makes a large portion of agricultural area dependent on agriculture. With the increase of population, their per capita income, habits, living styles, urbanization lead to greater demand for food, changing natural resources, and climatic conditions enhance the stress on land and water.

Use of Land

There is a need for utilizing about 328.73 million hectares of country's land for the necessary utilization which requires a pragmatic and scientific way of thinking. Lease hold of the land, free hold of the land and land as common property decide the human invention. Lack of money, short of technical knowledge and inadequate return of income, high cost of loans become impediments for the investment in land improvements. Over exploitation of resources is not just by the individuals but there is also a need for stopping and reversing the process of degradation.

Table-3.2 Details of Land usage in India

Sl. No.	Land usage	Area in Mega hectare (mha)	Area in Percentage
1	Forest Area	70.0	21.30
2	Non-agricultural uses	26.5	8.05
3	Barren and uncultivable	17.3	5.26
4	Culturable waste	12.6	3.83
5	Permanent Pastures	10.2	3.12
6	Miscellaneous tree crops	3.2	0.96
7	Fallow land	26.3	8.00
8	Agricultural land	181.95	55.30
9	Net Sown Area	139.9	42.57

Source: State of Indian Agriculture 2015-16

The changes of total land usage have been found in the statistics based on the temporal and special dimensions. As per the data of 2012-13, out of 328.73 million hectares, 181.95 million hectares is the agricultural area and out of which 139.9 million hectares is the cultivated land, 12.6 million hectares can be a cultivatable land and 26.3 million hectares belong to fallow land. In the recent years there is an increase in the non-agricultural land. There was an increase of 2.6 million hectares of non-agricultural land from 2001-02 to 2012-13. On the contrary the percentage of land used for cultivation reduced by 0.9 per cent i.e., to 1.6 million hectares. At one side the use of non-agricultural land is decreasing at the other side, the government has taken a lot of interventional measures to decrease the agriculture land at a slower pace compared to the numbers of 1950-51 and 2012-13, one can easily understand that there is an increase in the net sown area. In order to increase the agricultural production, land, soil, water, power, banking loan and insurance system become the inputs and out of which land and water are basic ingredients for the growth of the crop.

Degradation of Land

Land is the basic raw material needed for the growth of the crops and which require food, energy and human effort. In one-way soil formation happens on the other way soil erosion takes place at the rate of 1 mm every year. This results in the degradation of soil and may lead to the fertility of soil if it happens on the river side. There is no scientific survey for the degradation of land but localized surveys can be found on the same. In 2010, the Indian Council of Agricultural Research ICAR comes out with data that 37 per cent of land that is 120.40 million

hectares out of 328.73 million hectares was under the degradation. The reasons for this are water and wind erosion, collection of water, soil alkalinity, soil acidity, soil salinity, for mining and bad industrial waste management.

On account of industrial progress, there is a soil contamination by metals disposal of waste, fertilizers, paints waste water collection, waste material of collection. Methods on the soil cause chemical reactions especially the metals like lead, chromium, Arsenic, Zinc, cadmium, copper when they get mixed with soil. If toxic nature of such metals contaminates with soil, the biodegradable nature of soil gets reduced. The contamination of metals in the soil result in the dangerous health conditions to humans and to the overall environment. Over the time, it also leads to less utility of land for agriculture which in turn leads to shortage of food.

Land Fragmentation

With the growth of population, there is a reduction in the availability of land on the individual basis. The availability of land was 0.91 hectares per person in 1951, but it was 0.27 hectares in 2011 and which will further reduce to 0.2 hectares in 2035. Similarly, there is reduction of land for agricultural use from 0.5 hectares of 1951 to 0.15 hectares in 2011. Irregular shape, lack of approachability, time for travel, cost of human labour, aggravate the problem of land fragmentation. The shape and size determine agricultural production and if it is not economically viable, farmer may not get profits on his labour. Road connectivity, boundaries, makes the lands to be remained as uncultivated lands. The commercialization of agriculture becomes the need of the hour through medium and large sizes of farm in order to get greater scale of growth.

Diversion of Agricultural Land

The use of agricultural land has decreased in the past 40 to 50 years and one can notice the use of non-agricultural land usage from 19.60 million hectares to 26.45 million hectares from 1980-81 to 2012-13. The Government of India has been taking various measures to stop soil erosion and sown nearly 140 million hectares in the last 20 years from the degraded lands.

Land Holdings in India

There was a decrease in the average size of operational land and agriculture at census of 2000-2011 proves that there is a constant pressure of growing population on the agricultural land. From 2000-01 to 2010-11, there is a decline in the holding of land from 1.33 hectares to 1.15 hectares in 2011. The size of the land decides investment in agricultural activity, production and the overall income of the farmer. 67 per cent of the holding is less than 1 hectare and such small or marginal holding has increased from 22 per cent in 2010-11 to from 19 per cent in 2000-01. Small holdings also got increased with their operations from 20.2 per cent to22.1 per cent small and marginal holdings make about 85 per cent of the total holdings and 44 per cent of the total operated land in India.

Background of Organic Farming

Introduction

The historic movement of India in Farming has reflected the practice of agriculture by the Farmers and caused the deep root for many agricultural practices that is followed today. It is believed that the Organic Farming has enabled India to retain the sustainability over the ages. Thus, the concept of Organic Farming to India is not something that is new but by the birth of India the Farmers have well adopted the practice of the Organic culture. It was just not meant as a method of practice but it was and is considered as the practice of the traditional culture by shaping the economic life of the people from many centuries.

Many of the traditional practices of agriculture have started vanishing from India after the post-independence era. The aim of the green revolution is to grow more food so that the present

generation can meet the food security due to the growing rapid population that was considered as the major issue in the post independent era. Many agriculture scientists have devoted toward the progress and prosperity in the innovation of agriculture by introducing high yielding variety seeds, hybrid crops etc. by using with the help of fertilizers and the extensive use of pesticides to save crops from failure due to pests. This all innovation in the field of agriculture has laid to in cropping intensity, diversification, production and productivity and with enhanced cultivation in the acres of field with more yield resulting for the serious environmental changes and damages due to the modern use of agriculture practice.

Thus, many crops which were grown as traditional method are now changed to high yielding variety seeds. Simultaneously in the early stage of this innovation before the advent of the pesticides, many Farmers had to face severe crop failure due to huge outbreak in the pests; this resulted for the new idea to control growing pests as pesticides enabling huge loss in the fertility of soil and environmental bio diversity. This was started using the traditional agriculture leading to the multiple issues in the environment. Thus, there was a decline of the Microorganisms making soil less productive due to excess use of pesticides and fertilizers further leading in to the impact on health. This resulted to lose a relationship between the farmer and the soil and bio-diversity in the agriculture slowly started declining. Along with this there started loss in the purity of water, soil, air and most of the produced cultivated crops is surrendered by the pesticides making adding the more health and environment issues. Thus, to overcome these problems the country seriously thinking about the use of Organic cultivation as a means to end the conventional Farming to reduce its ill effects on the generation and environment for further development.

Likewise, in India, the state Karnataka had laid a movement initiated by the Farmers with innovative ideas and started gaining a momentum in the early 1980s. It was this period where the Farmers started agitating the use of conventional method and started finding an alternative means to it by the later of green revolution period due to the stagnation in the agriculture productivity during the period. The Farmers started facing a trap of debt since the conventional method of Farming started using more inputs belonging to the modern methods resulting in to huge cost incur by the Farmers. With this, the cost increased to peak but the net return started declining and reduced significantly where Farmers saw that the productivity and returns are not matched together. This copped up a situation to Farmers to suicide due to unbearable loss in the agriculture production. Thus, many Farmers started thinking that the major cause for the loss in the agriculture is due to the use of conventional method of agriculture and requires a urgent attention to solve the issue. Therefore, the modern agriculture has to be replaced by the Organic means of traditional agriculture for the sustainability in the agriculture Farming and ecosystem as whole. Thus, the Organic Farming in India and Karnataka raised with the slogan of 'live and let live' considering the best way to for the sustainable Farming.

Present Scenario of Organic Farming

As per the data revealed by FIBL-IFOAM survey on the basis of certified agriculture in terms of Organic products across worldwide by the year 2015 there are 179 countries with the agriculture land in hectares including the conversion is around 50.9 million. Thus, the data reveals that presently only one per cent of land in the total agriculture land is converted into Organic Farming. At the global level, Oceania, farmland has 22.8 million hectares, where European countries with 12.7 million constituting around 25 per cent followed by Latin America with 6.8 million hectares constituting around 15 per cent. Apart from these, Australia with 22.7 million hectares, Argentina almost by 3.1 million hectares and US by 2 million hectares. The agriculture land by total is 78 million hectares out of which 2.4 million producers are depended upon agriculture as per the survey revealed in 2015. The countries that produce the most agriculture production with the producers in India are 5.8 lakhs followed by Ethiopia by 2.03 lakhs and

Mexico by 2 lakhs. Around 81.6 billion US dollars transaction takes place in the global market for the Organic products according to the market research company. Among the leading countries in the global Organic products, the US is the highest, followed by Germany, France and China. Thus, as per the research market survey, all these countries in the global market of Organic Farming had laid to the double-digit growth and the highest per capita spending is seen from the country Switzerland where Denmark being the highest Organic market share of around 8.4 per cent from the total food market. No doubt India is one of the highest Organic producers across the globe. As per the Organic certification on 2016 India covers around 57.09 hectares in lakhs. The country exports 2.64 million tons of different and varieties of Organic products to the worth of Rs.19000 crore that accounts for the 0.3 per cent when compared to the global Organic status of trade.

Organic Farming in Karnataka is blessed with its eco-friendly and many other things enabling the prosperity of using Organic Farming in the state with its progressive, innovative ideas leading towards the growth of agriculture in the field of sustainable growth. Thus, in the view to keep ecosystem to its position, government of Karnataka brought an initiative policy on Organic Farming naming it as Organic Farming Policy during 2004. By this successful policy implementation, it started playing an important role in the Farming community with the methods of sustainability and progressive of the Farmers with the good returns.

By the initiation of this Organic policy, the state started gaining a slow with steady progressive growth in the sector of Organic agriculture with the expansion in the Organic area. Simultaneously with this policy there is creation in the awareness of the use of Organic Farming instead of the conventional Farming in terms of its impact on health, environment and more over protecting the soil with biodiversity involved in it.

At the current stage of Organic Farming in Karnataka, the state stands with 5th rank in terms of the cultivable land in hectares according to the data revealed by the Organic certification covering around 93,963 hectares on 2016 which was very less in the period 2004-05 around 2500 hectares only. Along with this, state stands 3rd in terms of certified production with 2.83 lakh tons. This shows that the state Karnataka is graced with ample of opportunities in the Farming especially in the field of the Organic Farming where both climate and environment adding the prosperity in the production of the Organic Farming. Some of the important Organic crops grown in the state are cereals, millets, fruits, spices and condiments, plantation, oilseeds, even medicinal and aromatic plants. This has enabled the state with huge production in the Organic Farming but growers in the field of Organic Farming are unhappy due to low remunerative prices for the products produced under the Organic Farming and on the other side the major problem is that consumers are not getting the preferences for the Organic produced since the prices for such products are comparatively higher than the conventional products since the consumer prefer those products which are less in prices. This results a huge loss for the Organic Farmers although the number of consumers demanding increasing for the purchase of Organic products but still it has unable to meet the requirement.

Table-3.3 Total area under Organic Certification Process of Selected States

During 2014-15 to 2019-20 (Cultivated + Wild Harvest)
(In hectares)

Sl. No.	Name of the State	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
1	Andhra Pradesh	100623.81 (2.06)	93350.73 (1.63)	172783 (3.88)	184748.7 (5.18)	37409.72 (1.09)	42101.87 (1.15)
2	Arunachal Pradesh	3688.61 (0.08)	72485.26 (1.27)	72311.27 (1.62)	6179.689 (0.17)	9246.939 (0.27)	10657.66 (0.29)
3	Assam	16258.02 (0.33)	28493.24 (0.50)	23930.4 (0.54)	28071.81 (0.79)	28234.67 (0.82)	26753.67 (0.73)
4	Bihar	247.1 (0.01)	91.7 (0.00)	679.2 (0.02)	695.8 (0.02)	3519.506 (0.10)	22712.55 (0.62)
5	Chhattisgarh	32405.1 (0.66)	180924.9 (3.17)	179752.1 (4.04)	191464.7 (5.37)	206180.7 (6.01)	208392.8 (5.68)
7	Goa	15621.24 (0.32)	16957.59 (0.30)	15762.43 (0.35)	15698.98 (0.44)	20964.8 (0.61)	20786.66 (0.57)
8	Gujarat	49862 (1.02)	80421.4 (1.41)	70495.05 (1.58)	85400.71 (2.39)	94708.69 (2.76)	95207.58 (2.59)
9	Jharkhand	71383.8 (1.46)	77048.73 (1.35)	36813.95 (0.83)	51187.93 (1.44)	58116.87 (1.70)	64254.18 (1.75)
10	**Karnataka**	**92157.09 (1.88)**	**133647.3 (2.34)**	**81948.81 (1.84)**	**105515 (2.96)**	**104962.4 (3.06)**	**170418.5 (4.64)**
11	Madhya Pradesh	1926369 (39.36)	2275567 (39.85)	2292697 (51.49)	1156881 (32.44)	918303.1 (26.78)	1161015 (31.64)
12	Maharashtra	217649.19 (4.45)	266299.2 (4.66)	292391.8 (6.57)	304074.8 (8.53)	261571.7 (7.63)	293135.2 (7.99)
13	Punjab	19293.58 (0.39)	17577.2 (0.31)	17648.53 (0.40)	18000.77 (0.50)	25524.58 (0.74)	25637.95 (0.70)
14	Uttar Pradesh	107529.11 (2.20)	106292.4 (1.86)	101459.9 (2.28)	192734.4 (5.40)	205980.8 (6.01)	132031.7 (3.60)
Total		**4893852**	**5710384**	**4452987**	**3566538**	**3428639**	**3669801**

Source: Ministry of Commerce and Industry, Government of India
Note: Figures are brackets indicate percentage to total

Table-3.3 explains the Organic certification processing in terms of its hectare from 2014-15 to 2019-20 gathered from the selected states of India. It is notable that the highest Organic process of certification is from Madhya Pradesh (39.36), followed by Maharashtra (4.45), where lowest being from the state of Bihar with 0.01 per cent during the year 2014-15. From the given year by looking at its trends, there is significant increase in the certification process of the states like Maharashtra, Karnataka, Bihar and Madhya Pradesh what was highest in the earlier period has not been performing well in the recent year that is from 2014-15 to 2019-20. Thus, the Madhya Pradesh which was around 51.49 per cent now declined to 31.64 per cent.

Table-3.4 State Wise Organic Product Export and its value during (2019-20)

Sl. No.	Name of the State	Exported Qty (in MT)	Total Value (in Lac)
1	Madhya Pradesh	351814.3 (55.06)	167020.1 (35.64)
2	Gujarat	58386.91 (9.14)	50917.23 (10.87)
3	Maharashtra	73176.54 (11.45)	47143.7 (10.06)
4	**Karnataka**	**21763.22 (3.41)**	**28551.11 (6.09)**
5	Uttar Pradesh	5281.879 (0.83)	10071.45 (2.15)
7	Andhra Pradesh	2340.432 (0.37)	8121.615 (1.73)
8	Goa	323.076 (0.05)	2001.764 (0.43)
10	Assam	286.516 (0.04)	698.719 (0.15)
11	Chhattisgarh	19.31 (0.00)	482.4422 (0.10)
12	Punjab	274.7 (0.04)	268.712 (0.06)
Total		**638998 (100)**	**468591 (100)**

Source: Ministry of Commerce and Industry, Government of India
Note: Figures are brackets indicate percentage of total

Table-3.4 describes about the Organic product export by the country at the international trade in terms of state wise for the period during 2019-20. Export of Organic product is seen highest from the Madhya Pradesh among all other states of India. The volume of export shared is around 55.06 per cent and has a contribution to the Indian GDP by 35.64 per cent in the total Organic export. Following by the state of Gujarat in India, as one of the top exporters with approximately 9.14 per cent from the total volume export of Organic products with the share of 10.87 per cent, next being Maharashtra by 11.45 per cent higher than the volume exported by Gujarat but contribution is less than to approximately 10.06 per cent. Whereas, rest of the states are performing at the moderate like Karnataka whose volume export is 3.41 per cent with the share of 6.09 per cent and the least performers are Punjab, Chhattisgarh and Assam.

The below Table 3.5 shows the Economic Gain of production from the use of organic to conventional farming during the year 2010. It is clear that the cost for the production of the Organic Farming is higher than that of the conventional Farming by negative -11.7 on an average of all the crops produced at different states. However, in terms of returns and profit earned from the Organic Farming is higher than the conventional Farming at the mean value of 22 per cent, indicating that although the cost under the Organic Farming might be high but the returns from such Organic products are high due their premium quality along with high demand at higher prices.

Table-3.5 Organic v/s Conventional Farming of Net Returns (2010)

State	Crops	Cost of Cultivation (Rs. ha^{-1})			Net Returns (Rs. ha^{-1})		
		Organic Farming	Conventional Farming	per cent increase (+)/ decrease (-) in Organic Farming	Organic Farming	Conventional Farming	percent increase (+)/ decrease (-) in Organic Farming
Maharashtra	Vegetables	25,000	26,000	-3.8	25,000	29,000	-13.8
	Fruits crops	70,000	78,000	-10.2	50,000	47	6.4
	Rice	10,000	11,500	-13	20,000*	18,000	11.1
	Wheat	8,000	9,000	-11.1	10,000	9,000	11.1
Karnataka	**Soybean**	**7,200**	**7,800**	**-7.7**	**9,000**	**10,350**	**-13**
	Chickpea	**6,700**	**7,250**	**-7.6**	**4,700**	**4,750**	**-1.1**
	Fruit crops	**20,000**	**23,500**	**-14.9**	**84,000***	**64,500**	**30.2**
	Groundnut	**13,000**	**14,500**	**-10.3**	**17,000**	**23,000**	**-26**
	Sugarcane	**55,000**	**60,000**	**-8.3**	**101,000**	**108,000**	**-6.5**
Tamil Nadu and Pondicherry	Cotton	10,000	10,000	0	11,000*	10,000	10
	Cashew	12,500	14,000	-10.7	13,500	6,000	125
	Banana	60,000	80,000	-25	240,000*	170,000	41.2
	Mango	25,000	30,000	-16.6	135,000	90,000	50
	Guava	20,000	25,000	-20	80,000	90,000	-11.1
	Coconut	30,000	34,000	-11.7	111,250	109,250	1.8
	Rice	25,000	20,000	25	37,500*	40,000	-6.2
Kerala	Pepper	36,500	40,200	-9.2	88,600*	44,300	100
	Banana	61,000	75,000	-18.6	194,000*	145,000	33.8
	Coconut	50,000	60,000	-16.5	166,000*	120,000	38.3
	Coffee	40,000	54,000	-25.9	75,000*	48,000	56.2
	Turmeric	87,000	140,000	-37.8	130,000*	85,000	52.9
Uttarakhand	Rice	18,000	20,700	-13	28,800	17,750	62
	Wheat	20,000	23,000	13	17,500	16,000	9.3
	Potato	20,000	18,000	11	28,000	42,000	33.3
Mean				**-11.7**			**22**

Source: Ministry of Commerce and Industry, Government of India, Ramesh et. al (2010)

Note: * Premium price available for Organic produced

Table-3.6 Productivity of crops (t ha^{-1}) in Organic versus conventional Farming (2010)

State	Crops	Organic Farming	Conventional Farming	per cent increase and decrease in Organic Farming
Maharashtra	Vegetables	11.0	13.0	-15.3
	Fruits crops	11.4	13.6	-16.1
	Rice	2.0	2.5	-20.0
	Wheat	1.2	1.5	-20.0
Karnataka	**Soybean**	**0.9**	**1.1**	**-18.2**
	Chickpea	**0.8**	**0.8**	**0.0**
	Fruit crops	**8.0**	**9.0**	**-11.1**

	Groundnut	**1.2**	**1.4**	**-14.2**
	Sugarcane	**120**	**140**	**-14.3**
Tamil Nadu and Pondicherry	Cotton	0.6	0.8	-25.0
	Cashew	1.3	1.0	30.0
	Banana	25.0	30.0	-16.6
	Mango	8.0	6.0	33.3
	Guava	20.0	23.0	-13.0
	Coconut	28,250 nuts	28,750 nuts	-1.7
	Rice	5.0	6.0	-16.6
Kerala	Pepper	1.38	1.40	-1.4
	Banana	23.6	27.2	-13.2
	Coconut	31,000 nuts	30,500 nuts	1.6
	Coffee	1.23	1.31	-6.1
	Turmeric	22.5	25.0	-10.0
Uttarakhand	Rice	3.77	3.82	-1.3
	Wheat	3.12	3.92	-20.4
	Potato	12.0	15.0	-20.0
Mean				-9.2

Source: Ministry of Commerce and Industry, Government of India, Ramesh et al (2010)

Table-3.6 depicts the productivity earned from different crops at different states by the Farmers from Organic to conventional Farming. It is noted that, in the literature review many stated that the productivity in the Organic Farming increases when used; however, in the table, it is showing differently, where the productivity is low when compared to conventional Farming. This indicates that, productivity under many crops is increased by conventional Farming method except for few crops like cashew; mango and coconuts are good for the Organic Farming.

Table-3.7 State wise Net Sown Area and the policies implemented
(Hectares in 2019)

States and UTs	**Total Organic Area (In hectares)**	**Organic area-Net Sown Area (percent)**	**Scheme wise break up of total Organic area**			**Organic Farming Policy/ Mission/ Act**
			NPOP (per cent)	**PKVY (per cent)**	**MOVCD-NER (per cent)**	
Madhya Pradesh	**756**	4.9	50.2	10.1	0.0	Policy, 2010
Maharashtra	284	1.6	55.7	8.9	0.0	Policy, 2013; Mission 2018
Uttarakhand	128	18.2	15.7	70.2	0.0	Policy, 2000; Act 2019
Uttar Pradesh	79	0.5	56.6	15.7	0.0	--
Karnataka	**111**	**1.1**	**51.2**	**9.8**	**0.0**	**Policy, 2004 and 2017**
Rajasthan	350	2.0	31.5	35.2	0.0	Policy, 2017
Chhattisgarh	71	1.5	10.3	33.6	0.0	Mission, 2013
Himachal Pradesh	18	3.3	46.4	22.8	0.0	Organic policy; Prakritik Kheti Scheme 2018
Gujarat	103	1.0	58.2	1.9	0.0	Policy, 2015
Arunachal Pradesh	22	9.8	2.8	1.7	38.4	Policy, 2014; Mission, 2017
Haryana	7	0.2	33.0	5.8	0.0	--

Manipur	19	5.0	1.3	3.1	65.4	Mission, 2016
Telangana	28	0.6	22.9	50.0	0.0	--
Jammu and Kashmir	26	3.4	68.3	2.2	0.0	--
Odisha	118	2.6	62.0	17.6	0.0	--
Tripura	9	3.4	2.4	11.7	58.8	--
Andhra Pradesh	144+	2.3	9.5	73.4	0.0	Draft policy, 2008 CR-ZBNF 2015
Nagaland	23	6.0	12.0	2.1	56.9	Policy, 2019
West Bengal	9	0.2	56.4	27.2	0.0	--
Assam	43	1.5	35.7	10.3	16.3	--
Total (India)	2,777	--	39.5	21.5	2.6	--

Source: Ministry of Commerce and Industry, Government of India
NPOP- National Programme for Organic Production
PKVY- Paramparagat Krishi VikasnYojana
MOVCDNER- Mission Organic Valve Chain Development for North East Region

The table 3.7 highlights the Organic condition of the country in terms of state wise and the policies they have adopted for the growth and prosperity in the field of Organic cultivation. The table clearly depicts the number of states involved in the Organic Farming with the total area of India covering around 2777 hectares where the Madhya Pradesh constituting the highest Organic area in hectares with 756 but the net sown area is comparatively lower than other states whose total area are lesser than the Madhya Pradesh. This shows that although MP is ranked higher in terms of area but the net sown area is lower indicating the availability of resources and their capacity to yield is lower than the other states. Followed by Rajasthan covering the area approximately 350 but the net sown area is only 2 per cent. Next Maharashtra state with 284 whose net sown area is 1.6 per cent. Likewise, Karnataka, whose total area under Organic Farming is 111 with the net sown area of 1.1 per cent. Among the state the highest net sown area is belonging to the state from Uttarakhand with 18.2 per cent and the total area constituting of 128. In terms of policy establishment in the country by state wise, the first state with the initiation for the Organic Farming is seen from the Karnataka state whose policy for the development of Organic Farming can be traced back to the 2004 and to the latest on 2017. Thus, overall table indicates that although the Karnataka is not doing well in terms of Organic Farming but still its position and historical background is much older than the other state showing the lead for the Organic Farming movement in India.

The below table-3.8 indicates the location wise cropping system engaged by the Farmers in their respective state where Karnataka grows major Organic cultivations like cotton, wheat, maize sorghum, pulses, oilseeds and vegetables which majorly comes under the category of commercial crops.

Table-3.8 State-wise major crops grown under Organic Farming in India
(Both certified and In-conversion)

Location	Crops Grown Under Organic Method
Arunachal Pradesh	Maize/sorghum, Pulses, oilseeds, tea/coffee, herbal/medicinal plants
Andhra Pradesh	Cotton, maize, pulses, oilseeds, fruits and vegetables
Assam	Tea/coffee, fruits and vegetables
Chhattisgarh	Rice, wheat, vegetables
Delhi	Wheat, vegetables
Goa	Fruits, vegetables
Gujarat	Cotton, pulses, oilseeds, vegetables
Haryana	Basmati rice, wheat, maize, vegetables

Himachal Pradesh	Wheat, fruits, vegetables
Jammu and Kashmir	Spices, fruits and vegetables
Karnataka	**Cotton, rain fed wheat, maize, sorghum, pulses, oilseeds, vegetables**
Kerala	Spices, vegetables, herbals
Manipur	Spices, vegetables, herbals
Maharashtra	Cotton, rice, wheat, pulses, oilseeds, spices, vegetables
Madhya Pradesh	Soybean, wheat, vegetables
Meghalaya	Spices, vegetables
Punjab	Basmati rice, wheat, vegetables
Sikkim	Maize, sorghum, vegetables, spices, herbs
Rajasthan	Cotton, wheat, seed spices, vegetables
Tamil Nadu	Tea, herbs, spices
Uttar Pradesh	Rice, wheat, maize, vegetables
Uttarakhand	Basmati rice, vegetables, maize, sorghum, herbs, spices
West Bengal	Tea and vegetables

Source: Ministry of Commerce and Industry, Government of India

Table-3.9 Cropping Systems being experimented under Network Project on Organic Farming under ICAR

Location	Cropping system
Modipuram (Uttar Pradesh)	Green manure-Rice-Wheat; Basmati Rice-Potato-Radish; Babycorn-Potato-Greengram; Sorghum (F)-Pea-Okra
Jabalpur (MP)	GM-Rice-Wheat; GM-Rice – potato -Okra; GM-Rice – Berseem; GM-Rice-Pea-Sorghum F
Coimbatore (TN)	Maize-Cotton; Chilly-Onion; Brinjal-Sunflower; Turmeric + Onion
Raipur (Chhatisgarh)	Soybean-Wheat; Soybean-Berseem; Soybean-Mustard; Soybean-Chickpea
Calicut (Kerala)	Ginger; Turmeric; Black pepper
Dharwad (Karnataka)	**Groundnut -Sorghum; Soybean- rainfed Wheat; Potato-Chickpea; Chilli + Cotton-Onion; Maize-Chickpea**
Karjat (Maharashtra)	Rice-Groundnut; Rice-Maize; Rice-Mustard; Rice-Dolichos bean
Ludhiana (Punjab)	Basmati Rice-Wheat-GM; Turmeric - Onion; Maize -Potato-Moong (S); Rice -Wheat-Moong (S)
Bhopal (MP)	Soybean- Wheat; Soybean-Mustard; Soybean-Chickpea; Soybean-Isabgol
Pantnagar (Uttarakhand)	Basmati Rice-Wheat-Sesbania (GM); Basmati Rice -Lentil-Sesbania (GM); Basmati Rice -Pea (veg.)-Sesbania(GM); Basmati Rice -Mustard-Sesbania (GM)
Ranchi (Jharkhand)	Rice -Wheat; Rice -Potato; Rice -Mustard / Linseed; Rice -Lentil
Umiam (Meghalaya)	Rice - Carrot; Rice - Potato; Rice – French bean; Rice - Tomato

Source: Ministry of Commerce and Industry, Government of India

Table-3.9 clarifies cropping system by location wise in experimenting under Network Project on Organic Farming where in Karnataka; it is done on the crops like groundnut, soybean, potato chickpea, Chilli, cotton and maize in the district of Dharwad.

STATUS OF AGRICULTURE IN KARNATAKA

Introduction

Karnataka with its vast geographical heritage has lots of natural resources containing mountain ranges, rivers, sea shores, forests and valleys. It has a history of more than 2000 years. A lot of well-developed towns have industrial hubs and become commercial and educational Centres. The State is beautifully surrounded by the Western Ghats and greenery in the western side. It has fertile land with black soil and irrigation facilities. The Arabian Sea is at the coastal side with pleasant beaches and fields with lush green paddy farms.

Boundaries of Karnataka

Karnataka is situated with 11'38 North and 18'30 North latitudes and 74'5' East and 78'35 East longitudes. There is western ghat which also touches Nilagiris. The State of Karnataka is at the Southern part of India. According to States reorganization, Karnataka was created on the 1st November 1956. At the time of reorganisation, it was called Mysore state and in 1973, it was named as Karnataka. At the western side, it has the Arabian Sea. At the northwest, it has Goa and the State of Maharashtra is at the northern side and Tamilnadu is at the southeast and Kerala is at the southwest. The boundaries of Karnataka extend upto750 kms From North to South and 400 kms from East to West.

Agricultural Background of Karnataka State

The agricultural history dates to 9000 B.C where one can see the domestication of animals and crops 60 per cent country's workforce involved in agriculture sector and is a driving force in GDP playing a vital role in the economic development of the nation. 1.92 lakh square KM of area is covered under agriculture, making Karnataka as the eighth largest State of India. Karnataka has 27,481 villages under 174 talukas which are located in 30 districts. The data of 2011 Census reveal that 13.74 million agriculture workers of whom 23.61 per cent are cultivators and 25.67 per cent are workers. 64.6 per cent agricultural land covers 1, 23,199 Sq Kms of cultivation. Some parts of Karnataka have irrigation facility and other parts are dependent on rain. Around 60 per cent of agriculture is involved in agriculture.

Karnataka's 30.900 Sq. Kilometres of area is under irrigation amounts to 26.5 per cent and 64.5 per cent of the remaining area is dependent of rain. In terms of Horticulture, Karnataka stands in the 5th position in India and fifth in crops and third in fruit production. Next to Gujarat, Karnataka is the 2nd largest producer of milk. It also produces 70 per cent of coffee and third largest producer of sugar. The vast coastline of Karnataka has 276 types of fishes. The horticulture crops account for 96.6 lakh tonnes grown in 15.21 lakh hectares and Karnataka is known for vegetable production with conducive climates conditions. Along with agriculture, even fisheries are growing in Karnataka.

Agriculture is the main occupation in rural Karnataka and in spite of odd monsoon; food grain production grew by 14 per cent in 2010-11 with the increase of land cultivation area of 2.9 per cent. And 15.94 per cent of State GDP is contributed by agriculture. Compared to last decade, there is also decline in SDP. Agriculture growth rate from 2004-05 has grown from -2.87 from 2005-06 to 13.6 in 2010-11. But the same again come down to -2.9 per cent in 2011-12. Per capita income rose in manufacturing and services industry but the per capita GSDP in the rural areas from agriculture sector is very low. Compared to the non-agricultural sector, there is a lower labour productivity 50 per cent of the workforce in the State is involved to bring about 1/5 of the State GDP.

A Few Facts from the Agriculture Census 2010-11

Ministry of Agriculture and co-operation conducts Agricultural Census for every five years since 1970-71. So far 9 agricultural Census have taken place and last census was conducted in 2010-11.The data of agriculture census is to understand the agricultural holdings of the

agriculturists, use of irrigation methods, types of crops, use of fertilizer, multiple crop patters, effect of Organic and Inorganic manure, utility of implements and finance facilities for the agriculturists 2005-06 is known as the land records years to update the land details and holders by the Revenue authorities.

The Following are the Main Findings of the Agriculture Census of 2010-11 With Reference to Karnataka State

1. There is a growth of 3.37 per cent of agriculture holdings from 2005 to 2011 from 75.61 lakhs to 78.32 lakhs.
2. Out of this 78.32 lakhs male hold the 80, 86.7 i.e., 63.33 lakhs, female own 14.86 lakhs (18.97 per cent) and 0.19 per cent. Is owned by various institutions.
3. Out this 49.1 per cent belong to land with less than 1 hectare and 27.3 per cent of land is of one to two hectares. 16 per cent of the land is of two to four hectares in the semi medium holding and large holding 10 hectares is only 0.9 per cent.
4. The total operational area in 2005-06 was 123.85 lakh hectares but the same was reduced to 121.62 lakh hectares that is about 1.8 per cent.
5. The male operated area was 101.90 lakh hectares which was 83.78 per cent. The female operated area was 18.92 lakh hectares that is about 15.61 per cent. The institutional operators did 0.74 lakh hectares, i.e., 0.61 per cent.
6. Semi-medium size of holding was 27.9 small classes holding was 24.8# Medium class holding was 23.9 per cent large class holding was 8.2 per cent.
7. On account of sub division and fragmentation of land, the average size of land holding has come down a little from 1.63 hectares to 1.55 hectares from 2005 to 2010.
8. Even the size of the female operated land has come down from 1.61 hectares to 1.28 hectares.
9. The average size of the holdings increases with the size of classes.
10. The scheduled caste group has the holdings of 9.14 hectares. There was an increase from the previous data of 8.82 lakhs. The scheduled tribe holdings grow from 4.39 lakhs to 4.73 lakhs from 2005 to 2011.
11. Among the holdings of the scheduled caste, there was a decline from 11 lakhs hectares to 10.74 lakh hectares from 2005 to 2011. The same type of decrease can be found in the holdings of scheduled tribe 7.25 lakh hectares to 7.05 lakh hectares from 2005 to 2010.
12. The individual type of holdings had the maximum of 99.13 per cent of holding and about 0.70 was with joint holdings. The institutional type of holdings was with 0.17 per cent.
13. 98.55 per cent of the total area operated by individuals and 0.85 per cent of the area was done by the joint holdings and 0.6 per cent of the land area was used by institutional types.
14. According to 2010-11, the average size of individual holdings is 1.85 hectares and institutional type holds 5.78 hectares. In 2005, the individual holding size was 1.63 hectares and institutional type was 4.87 hectares.
15. In the date of 1970, the operational holding was 35.51 lakhs but the same in 2010-11 grew up by 121 per cent to about 78.32 lakh holdings.
16. From the first census of 1970-71 there is a decrease of 0, 1 per cent from 1976 census. One can see the constant fluctuations with the increase from 1980 to 1991 and in 1996 census and it fell by 1.87 in the census of 2010-11. The total area of 113.68 lakh hectares

was the area of operation in 1970-71, but the same got increased to 121.61 lakh hectares in 2010-11.

17. The average size of holdings got decreased from 1970 to 2010 from 3.2 hectares to 1.55 hectares i.e., a decrease of 52 per cent.

Cropping Pattern in Karnataka

In Karnataka agricultural crops are taken in three seasons like kharif accounting for 71 lakh hectares and Rabi crop for 33 lakh hectares and summer crop for about 110 lakh hectares, 49 per cent of the crops are pulses, oilseeds, with 25 per cent, 15 per cent cotton and 5 per cent production is that cotton and 1 per cent is that of tobacco.

a) Paddy is one of the major crops grown in Uttara Kannada, Shivamogga, Udupi, Raichur, Koppal, Mysore, Gadag and Haveri districts. In 2011-12, there as 14.15 lakh hectares of growth this was 13.53 lakh hectares in 1097-08. Paddy is grown in all the three seasons of the year.

b) Jowar is grown in the North Karnataka districts like, Kalaburgi, Raichur, Koppal, Dharwad, Belgaum, Ballary, Gadag and Haveri, Bidar and Davangere districts. During 2011-12, around 11.38 lakh hectares was grown especially in Rabi season.

c) Ragi is in the Southern part of the State in the districts like Rural Bangaluru, Tumkur, Chitradurga, Hassan, Mysore, and Chamarajnagar for about 6.85 lakh hectares of production. Maize is grown 13.52 lakh hectares and 2.87 lakh hectare of area of bajra is grown.

d) Red gram is grown in the districts like Raichur, Kalaburagi, Koppal, and Bidar as the Kharif crop. Nearly 30 per cent of pulses category Red grain takes the share.

e) Bengal gram is grown in the districts like Bidar, Kalaburagi, Bagalkot and Vijayapura, Haveri and Dharwad districts for about 7.97 lakh hectares in 2010-11.

f) Groundnut The districts like Tumakuru, Chitradurga, Davanagere, Kalaburagi, Dharwad, Gadag grow groundnut in its 69 per cent of area 6.78 lakh hectares area was sown during 2011-12.

g) Sesamum oil seed is grown as the kharif crop in the districts like Kalaburagi, Bidar, Koppal and Raichur for about 0.62 lakh hectares of area in 2011-12 Sunflower is grown in 3.76 lakh hectares for about 84 per cent of area in the districts like Raichur, Bagalkot, Koppal, Kalaburgi, Dhawad, Bidar, Gadag, Haveri for the year 2011-12.

h) Safflower is used to extract oil from it and is grown in rabi season in the districts like Vijayapura, Bagalkot, Kalaburagi, Gadag, Dharwad, Haveri, Koppal etc.,

i) Cotton is grown in the districts like Gadag, Haveri, Dharwad, Ballary, Belgaum, and Koppal and covered for 5.7 lakh hectares area in 2011-12.

Rain fed Farming

Most of the agriculture in Karnataka is dependent upon in time rain. Karnataka with 5.2 mn ha in the second rain fed Agriculture State in India, these types of areas under harsh climatic conditions lack of water, decline in the quality of natural resources and all such factors lead to low agriculture production. With better crop pattern, agriculture methods one can enhance production in dry areas.

Inputs for agriculture

Fertilizers enhance agricultural production and fertilizers like NPK, urea etc. need to be used in proper manure. The State Government maintains the adequate stock of such fertilizers to avoid the shortage in the season time. In the recent times, there is a stress to have relook at the use of

Organic fertilizers Rhizobium, blue green algae as these are environmentally friendly methods leading to the growth of chemical free crops.

The State Agricultural Universities look for the production and supply of seeds out of 53 seed farms, 42 seed farms are under the Agriculture department and the remaining 11 are under the Zilla Parishad Karnataka State Seed Corporation processes and multiplies seeds. There are multinational companies which are involved in seed production. And seed testing laboratories are situated in Hebbal and Dharwad. Agriculture implements are very important in everyday agriculture life. The agriculture equipments are given with 25 per cent subsidies under the scheme Farm Mechanization Programme under Macro Management mode of Agriculture sponsored by the Central government. With the involvement of State by sharing 25 per cent of subside, the total subsidy has gone up to 50 per cent under the matching grant programme. In the recent years, the entire 50 per cent of the share has been borne by the State Government. Under the Rastriya Krishi Vikas Yojana taken up by Karnataka farm Mechanization Programme. Rs.29, 252-90 lakhs were given as the 50 per cent subsidy. Even to the extent of 90 per cent subsidy has been provided to the Farmers of schedule castes and scheduled tribes in order to bring mechanization in agriculture which in turn leads to greater productivity.

Agriculture Development Programs in Karnataka

Introduction

Programs of agricultural development are described as the process of creating profitability and good opportunities for agricultural potential to increase the productivity of crops.

Karnataka Seed Mission

In Karnataka Seed Mission Scheme was implemented in 2008 with an idea to achieve greater agricultural production and to make Karnataka as the global Centre for Seed production, and to understand the areas of gaps in the quality of Seed production especially in its requirement and infrastructure facilities. It aimed to develop farmer centric approach.

National Food Security Mission

The 480 districts of 18 States are under the National Food Security Mission, where rice, wheat and pulses are grown with an idea to enhance production by 10 million of rice, 8 million of wheat and 2 million of pulses. Belagavi, Dakshina Kannada, Hassan, Raichur, Udupi, Uttar Kannada districts were under the scheme NFSM (Rice) and NFSM (pulses).

Rashtriya Krishi Vikas Yojana

Under the 11th five years program, Rashtriya Krishi Vikas Yojana (RKVY) was implemented in 2007. Around 595 Crores of Rs. were allotted for the schemes related to agriculture, horticulture, animal husbandry fisheries, sericulture. An amount of Rs.794.68 crores was sanctioned for the implementation of various schemes in 2013-14 under RKVY.

In the year 2013-14, Rs.312.89 crores was allotted for the various programs. As shown in below table**.**

Table-3.10 Allocation of Funds under RKVY Programme during 2013-14

Sl. No.	Name of the Project	Approved Fund
	Normal RKVY Scheme	
1	Karnataka Farm Mechanization Mission	70.00
2	Bhoo Chetana	55.00
3	Karnataka Seed Mission	56.10
4	Improving livelihoods in Karnataka through CGIAR initiative	25.50
5	Popularization of Direct Seed rice	5.00

6	Agro Processing and post-Harvest Technology	30.00
7	Organic Farming-on site activities	12.50
8	Additional Expenditure of INSIMP during 2012-13	5.39
9	Mechanized transplanting of Rice	3.00
10	Strengthening of Seed farms including Swabeejabhivrudi	30.00
11	Administrative cost	6.90
Special Scheme		
12	Initiative for Nutritional Security through Intensive Millets Promotion Programme (INSIMP)	13.50
Grand Total		**312.89**

Source: A Hand Book of Karnataka 2015

Integrated Scheme for Oilseeds Oil Palm and Maize

Integrated scheme for Oilseeds Oil Palm and maize (ISOPOM) is a Central Government Program for the development of oil seeds, pulses and oil palm and their growth in production. There was a distribution of share between centre and Karnataka with the ratio of 75:25. In all the 30 districts of Karnataka, the program is implemented.

Bhoo Chetana

Bhoo Chetana is a unique program of Government of Karnataka for 2009-10 to enhance the agricultural production by 20 per cent for the next four years. The program was implemented in all 30 districts of Karnataka. It was estimated to cover 50 lakh hectares in rain fed areas and 5 lakh hectares in the irrigated areas various chemicals and fertilizers were made available to Farmers. The programs Bhoomi Chetana 1st project success led to Bhoo Chetana 2 program which was from 2013-17 covering all 30 districts of Karnataka.

Suvarna Bhoomi Yojane

Suvarna Bhoomi Yojane is a program for 2011-12 to facilitate the Farmers to shift from low income crops to high income crops. The growth of crops like pulses, oil seeds and BT cotton were encouraged. Nearly 10 lakh small Farmers are covering and 2 lakh SC and 1 lakh ST Farmers with the help of subsidy of Rs.10000 and Rs.5000 to uplift the financial status of the Farmers. Nearly Rs.1,000 crores was budget for the implementation of this program.

Initiative for Nutritional Security through Intensive Millets Promotion Programme

Initiative for Nutritional Security through Intensive Millets Promotion Programme (INSIMP) - is a Central Government program for 2011-12 to enhance the production of millets in Karnataka covering 23 lakh hectares of area of 15 districts of Karnataka Foxtail millet and cittle millet was grown in 47,560 hectares. In Rabi season, the program was implemented in 5 districts covering 11,000 hectares of area and 10,900 Farmers.

Under the scheme, free input kit, training to Farmers and creating awareness camps on the use of millets was organized with the total budget of 26.57 crores in 2011-12 and Rs.13.50 crores for the year 2013-14.

Raitha Samparka Kendra

The 747 Raitha Samparka Kendra was set up by the Department of Agriculture to provide necessary information to Farmers on agriculture and marketing aspects. In order to increase the skill set of the farmers bi monthly and fortnightly training sessions were conducted. Seed sample and soil testing were also conducted at a cheaper rate in these centres. Rentals for space for stock, demonstration, for promotional activities were also arranged.

Agricultural Technology Management Agency

This is an autonomous body to foster research and technology in agriculture. It was developed with continuous activities in a decentralized way at district level involving NGOs and other

departments. Zonal Research Stations are Krishi Vigyan Kendras were the sub units even covered horticulture and fisheries. There are even various committees like Inter Departmental Working Group to implement agriculture programs at State, District and taluk levels.

The scheme was in force from 2005 and providing information about technology even at the block level as per the needs of the Farmers. Even gender issues were also dealt in this program.

Relief Programs

A relief of Rs.1 lakh was issued to the families of Farmers who committed suicide and in 2013-14, Rs.100 lakhs was budgeted and Rs.54 lakhs was distributed to the farmer's families in 2013 December. Even accidental death of Farmers and agriculture labourers used to make the families to get Rs.1 lakh and Rs.10, 000/- was given for the fire accidents to fodder. Rs.500 lakhs was allotted in 2013-14 and Rs.499.68 was distributed till the end of December 2013.

Kissan Call Centres

The government of Karnataka has set a Call Centre for Farmers with toll no 1800-180-1551 to guide the Farmers on seed, fertilizers, pesticides and other agriculture related issues at various levels. The call Centre is located in Bangalore.

Raita Shayavani Kendra (Farmers Helpline Centre)

This is information Centres with a toll-free number 1800-425-3553 to assist the Farmers on agriculture related issues from 7 am to 9 pm. The centre receives around 50 calls a day.

Krishi Vigyan Kendra (KVK)

Indian Council of Agricultural Research (ICAR) supported for the start of Krishi Vigyan Kendra in all districts to monitor the use of technology and sustainable use of land by organizing various training programs in Karnataka, there are 31 KVKs working under horticultural and agricultural universities.

Minimum Support Price (MSP)

Minimum support price has been fixed by the Central Government on various crops as per the recommendations of commission for Agricultural costs and prices. In Karnataka MSP is given for onion, potato, tomato, green chillies which are perishable in nature. HOPKOMS buys these Crops at the district and taluk level.

Karnataka Krishi Mission (KKM)

Under the Chairmanship of the Chief Minister of the State Krishi Mission has been set up for the holistic development of agriculture. It aims to develop new plans and programs and to bring coordination among horticulture, veterinary, fisheries and agriculture. It also aims at the proper utilization of land, soil, water and promotion of Organic Farming. It guides Farmers on marketing by organizing social groups.

Agri Business in Karnataka

It is an initiative to bring sustainable co-ordination among fisheries, sericulture, agriculture, horticulture and food processing areas and concerns regarding the growth in these sectors. The Government of Karnataka has taken various steps for the identification of land banks for the comprehensive development Karnataka is one of the leading States for the horticultural crops production and congenial environment of the State supports greater agricultural growth.

Crop Insurance

In 1948, Dr. Rajendra Prasad introduced the bill of crop insurance in the parliament and Dr. Dharm Narain gave the frame work for the same in 1970. After undergoing several changes, Comprehensive Crop Insurance Scheme CCIS was launched in 1985. Rashtriya Krishi Bima Yojana was started in 1999. Borrowers agriculturists were made to avail insurance scheme compulsorily while the non-borrowers could take insurance facility on their own will.

Rashtriya Krishi Bima Yojana (RKBY)
It was started in Karnataka since 2000 for kharif season with an idea to provide financial help in case of loss of crops due to natural calamities and diseases. It also encouraged the Farmers to use quality seeds, use of technology in order to get good income to Farmers. Many crops like ragi, paddy, jowar, bajra, maize, grams, groundnut, sunflower, linseed, potato, onion were covered for all seasons under this scheme.

Weather Based Crop Insurance Scheme
It aims to support Farmers in the event of famine, storms, floods and other weather fluctuations. 17 Districts of Karnataka were covered for different notified crops like ragi, paddy, maize, soybean, groundnut, cotton etc.

Modified National Agricultural Crop Insurance Scheme
It is an improvised version of Rashtriya Krishi Bima Yogana and it was first introduced by the Central Government in Kalaburgi, Shivamogga, Tumakuru and Uttar Kannada districts. The loss due to hailstorm, land sliding and other local natural disasters were accounted on the individual level and paid as per the policy guidelines. The crops like maize, ground nut, jowar, Bajra, Ragi, navane, horse gram, caster, onion and such crops were covered under this scheme.

Krishi Karman Award
This award is given by the Government of Karnataka for growing highest cereals for 2010-11. The area under coarse cereals was 40 lakh hectares in 2000 but the same was reduced 36.5 lakh hectares in 2010-11. But there was an increase in production from 59 lakh tones to78.45 lakh tones. Even per acre productivity also got increased.

The overall food production was 120.49 lakh tones to 2007 but the same was 139 lakh tonne in 2010. Apart from the increase in agriculture production, Karnataka is known for effective use of agricultural technology. Improving productivity, enhancing public private partnership was done under Bhoo – chetana program.

Krishi Prashasti Program
The hard efforts of Farmers are very important for the greater productivity and in order to encourage Farmers who are innovative and hardworking, Krishi Prashasti Scheme was introduced in 1992. Different prize amount was fixed for various crop productions.

Krishi Pandit Prashasti Program
The Farmers who are contributing for the welfare of the Farming community are recognized under this program and awarded with the 1st prize of Rs.1,00,000/- 2nd prize with Rs.50,000/-, 3rd prize Rs.25,000/-. The scheme was started in 2001 to honour the Farmers who are creative and innovative in the efficient use of water, **Organic Farming**, developing new farm implements and integration of Farming system with the diversification of crops etc.

Table-3.11 Details of Krishi Pandit Prashasti Programme

Sl. No.	Year	No of Award winners (Farmers)	Total Prize Amount (In Lakhs)
1	2001-02	6	3.75
2	2002-03	6	3.75
3	2003-04	9	4.50
4	2004-05	9	4.50
5	2005-06	7	5.50
6	2006-07	22	7.00
7	2007-08	23	5.75
8	2008-09	20	5.25
9	2009-10	20	6.75

10	2010-11	26	7.00
11	2011-12	22	6.00
Total		**170**	**59.75**

Source: A Hand Book of Karnataka 2015

Table-3.11 shows the details of the Progress of Krishi Pandit Prashasti Programme in Karnataka. From the year of 2001 to 2012 Total 170 Farmers has received Krishi Pandit prashasti for their contribution to innovative agriculture practices. For this government has released maximum fund. For the period of 2001 to 2012 59.75 lakhs cash prizes has been disbursed to Farmers.

Overview of Organic Farming in Karnataka

Introduction

Organic Production is an overall system of farm management and food production that aims at sustainable agriculture, high quality products and the use of process that do not harm to the environment, human or livestock.

The below table-3.12 reflects the Karnataka's Organic culture at a glance for the period of 2015-16. The total area constitutes about 133647.27 in which Organic covers around 26438.32 with the conversion process of 67525.02 and area under wild with 39683.93 with the total production in terms of million tons is approximately 282685.02. With this there are number of NGOs enabling for the smooth functioning of Organic cultivation in the state by 101 organizations, followed by the research centers for the innovation in the field of Organic Farming with 6 centers. There are around 995 Organic Farmers who are considered as the role model for the innovation in the field of Organic Farming recognized by the state government. Along with this there do Farmers who grow the Organic crops as the terrace gardeners constitute 16 in number with the resource person in the field of Organic Farming are 335 and regional federations by 14. There are 124 Organic manufacturers with private outlets 513 and mega stores by 48 especially meant for the Organic products to sell. Other things include are Organic restaurants with 20, Organic seed dealers 2, number of vermi compost producers 56, etc.

Table-3.12 Organic Agriculture of Karnataka at a Glance (2015-16)

Sl. No.	Particulars	Figures
1	Organicarea(ha)(2015-16)	26438.32
2	In-conversion(ha)(2015-16)	67525.02
3	Wildproductsarea(ha)(2015-16)	39683.93
4	Total area(ha) (2015-16)	133647.27
5	Total production(MT)(2015-16)	282685.02
6	NumberofNGOs'engaged inOrganic Farming inthe State	101
7	Number of Organic Farming research centers/institutes	6
8	Numberof modelOrganicFarmers/privateFarmers	995
9	Number of Organicterrace gardeners	16
10	Numberof Resourcepersons inOrganicFarming	335
11	NumberofRegionalfederationsofOrganicFarming	14
12	Number of Organic manufacturers/ traders/ processors	124
13	Number ofPrivateOrganicoutlets/retailers/stores	513
14	Numberof Mega storeswithOrganic shelves	48
15	Numberof Organicrestaurants	20
16	NumberofOrganicseeddealers	2

17	Numberofgreen manureseed dealers	15
18	Number ofOrganicmanuresproducers /distributors	24
19	Numberofvermi-compostproducers	56
20	Number ofbio-fertilizerproducers/distributors	16
21	Number of suppliersof bio-pesticides	14

Source: Agriculture Census of Karnataka

Table-3.13 District wise certified and in- conversion area of Karnataka State forthe Period of 2015-16

Sl. No.	Name of the District	Organic Area (In Ha)	In Conversion Area (In Ha)	Total
1	Bagalakot	66.97	2831.22	2898.19
2	Bengaluru	84.28	745.28	829.56
3	Bengaluru Rural	379.20	1264.99	1644.19
4	Belagavi	12275.56	3,462.66	15738.24
5	Ballari	356.37	2027.76	2384.13
6	Bidar	214.85	3927.46	4142.31
7	Chamarajanagar	381.43	1484.713	1866.14
8	Chikkamagalur	446.746	1993.403	2440.15
9	Chitradurga	593.202	1703.29	2296.49
10	Dakshina Kannada	86.98	881.534	968.51
11	Davanagere	213.622	2218.08	2431.70
12	Dharwad	5553.928	2963.185	8517.11
13	Gadag	1297.63	1097.712	2395.34
14	Kalaburagi	23.62	5193.741	5217.36
15	Hassan	405.41	938.68	1344.09
16	Haveri	978.93	1912.47	2891.39
17	Kodagu	333.83	883.72	1217.55
18	Kolar	160.86	3701.47	3862.33
19	Koppal	17.11	1896.51	1913.62
20	Mandya	468.67	2992.32	3461.00
21	Mysore	241.02	4684.62	4925.64
22	Raichur	279.9	3010.85	3290.75
23	Ramanagara	0.00	663.68	663.68
24	Shivamogga	1,197.60	1,455.15	2652.75
25	Tumkur	409.44	2568.26	2977.70
26	Udupi	0	556.72	556.72
27	UttaraKannada	1528.64	3511.79	5040.43
28	Vijayapura	0	1694.09	1694.09

Source: Agriculture Census of Karnataka

The table-3.13 notifies about the district wise area covered by hectares in the Organic area and its conversion process for further enlarging the size of the Organic area for the period 2015-16. Among the districts in Karnataka, Belagavi has the highest number of Organic Farming by area constituting total 15738.24 with the present area covering 12275.56 and in conversion it is 3,462.66. Followed by the district Dharwad with the total area of 8517.11 with the present area covering 5553.928 and in conversion it is 2963.185 to the least Ramanagara with 663.68 followed by Bengaluru with 829.56. The main aim of the table is to highlight the position of the Organic Farming by its area and further merging the area for the production of the Organic

Farming at large scale so that the state can meet the basic needs of food security in the due course of time with the benefit of sustainability of agriculture.

Table-3.14 District Wise Cropped area under Organic Certification 2016-17(Area in Hectares)

Particulars	Belagavi	Dharwad	Uttara- kannada	Hassan	Chikka magaluru	Shivamogga	Udupi	Kodagu	Mysuru	Dakshin-kannada	Grand Total
Cereals											
Area	1428.4	636.3	1108.5	1658.3	1004.9	1269.7	189.9	403.7	1597.6	88.1	9385.4
Yield	5137.8	1210.2	2297.2	4986.3	2777.2	4438.4	579.5	1563.1	4843.1	212.8	28045.6
Pulses											
Area	160.7	56.3	14.1	2.4	4.5	8.4	0	0	702	0	948.4
Yield	139	47.1	73.3	37.1	19.7	3.9	0	0	1232.6	0	1552.8
Oil Seeds											
Area	355.2	41.2	0	18.1	164.4	17	0	0	187	0	782.9
Yield	470.2	33.8	0	61.7	170.4	5.5	0	0	323.8	0	1162.7
Commercial Crops											
Area	1678	110.3	44.4	189.3	3.8	18.1	0	0	514	0	2557.8
Yield	113660	12982.6	2808.3	482.8	10.8	58.6	0	0	11870.3	0	141873
Plantation Crops											
Area	4	0	667.9	490.1	1200.3	516.5	294.7	528	314.5	485	4501.1
Yield	18.2	0	2231.9	1454.2	5196.3	1136.5	574.2	2073.9	3026.2	783.5	16494.8
Fruits Crops											
Area	48.2	0	11.8	38.4	88.1	42.5	1.9	41.1	66.8	0.1	338.8
Yield	1291.5	0	343.8	171.3	611.3	1530.6	62.7	961.7	2084.5	37	7094.4
Vegetables											
Area	200.7	202	0	182.8	70.2	15.1	0.2	3.9	133.2	0	808.1
Yield	1149.6	1530.8	25.5	910.4	614.8	62.6	53.6	134.9	1713	1.9	6197.1
Spices											
Area	17.9	0	0	7.8	0	33.2	0	0	0	0	58.8
Yield	73.8	0	13.4	37.6	0	43.1	0	0	0	5.7	173.6
Flowers											
Area	2.1	0	0	0	0	0	0	0	1075.2	0	1077.3
Yield	2.1	0	0	0	0	1.1	0	0	614.5	0	617.7
Fodder Crops											
Area	1.3	0	0	2.7	2.9	0	0	0	0	0	6.9
Yield	0	0	0	7.6	5	0	0	0	0	0	12.7
Grand Total Area	3910.8	1046	1846.7	2589.9	2539.1	1920.5	486.6	976.7	4590.2	573.2	20479.7
Grand Total Yield	121995	15804.5	7902.6	8148.9	9405.4	7280.4	1270	4733.7	25708	1040.9	203289
No. of ICS	25	5	20	30	27	33	6	13	26	10	195
No. of Farmers	2443	611	2321	2571	2264	1841	438	159	1627	1627	15902

Source: Agriculture Census of Karnataka

Table-3.14 highlights the district and crop wise area and their respective yield under the certification of Organic products for the period 2016-17. There are altogether 11 crops highlighted in the table posing their area under cultivation and also their yield.

In terms of **cereals cropping** total area constitute 9385.4 where the yield generated is approximately 28045.6 among this the highest district by area is Hassan but the yield is comparatively lower than the district with highest is Belagavi.

Following **Pulses cropping** total area 948.4 with the yield 1552.8 where the highest district is from Mysuru by area and yields both. In terms of **oil seeds** total area is 782.9 and yield by 1162.7 with the highest district belonging from the Belagavi both by area and yield.

The important **Commercial crops** grown in the state with the total area of 2557.8 and yield by 141873 that belonging highest from the district of Belagavi by its area and yield both followed by Mysuru by area and Dharwad by yield. Likewise, **plantation crops** total area with 4501.1

and its yield for approximately by 16494.8 out of which the highest district who produces the most is Chikkamagaluru by area 1200.3 and yield by 5196.3.

In terms of **fruit crops** total area by 338.8 yield by 7094.4 of which Mysore being the highest district for the area and yield. Similarly, in terms of **vegetables** grown in the category of Organic field with the total area covering by 808.1 and with the approximate yield of 6197.1 where the highest district is from Dharwad in terms of area and by yields the highest is from Mysore.

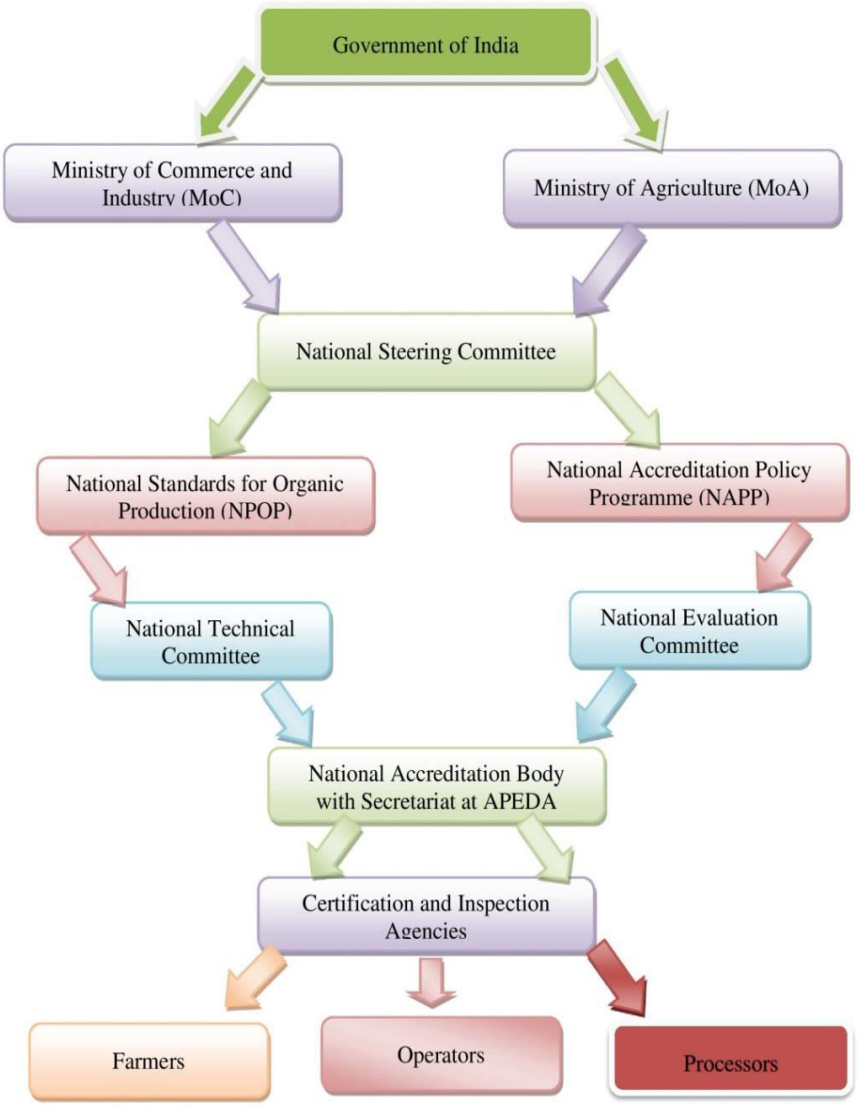
In case of **spices** the total area covered is 58.8 with the total yield of 173.6 where the highest is seen from the district Belagavi, likewise **flowers** plantation of Organic cultivation, the total area covered is 1077.3 but the yield is very less by 617.7 where the highest production is seen from the Mysore both by area and yield. Lastly, in terms of fodder crops the approximate total area covered is 6.9 and the production is about 12.7 from the district Chikkamagaluru by area and district Hassan by yield. To see over the entire table highlights the Organic Farming status and in terms of number of Farmers which is seen highest from the district Hassan and the number of ICS from the district Shivamogga. To note, all the plantation of Organic Farming whose yield is greater than the area except for the production of flowers and to observe in most of the plantation the highest district is Belagavi followed by Mysuru showing their domain in the respective crop production.

Operational Structure and Organic Centers

Table-3.15 Ideological Approach between Organic to Inorganic Farming

Organic Farming	Inorganic Farming
Decentralize Production: inputs like manure, seeds, are produced at the ground level hence, suitable for the local environment, generating employment and low cost of production	**Centralize Production:** made from the factories that may not suitable to the local climatic condition, with no employment at local, high in cost of production
Input optimization: making use of available resources and recycling	**Output maximization:** affecting productivity in the long run by over use of resources
Preventive, Proactive and Protective approach by less inputs and avoid of chemicals	**Cause and control approach** damaging the system of environment due to heavy inputs
Nature by Harmony: protecting the natural resources	**Nature by Domination:** use of chemical inputs affecting the cycle of the ecosystem
Diversity: output of Organic Farming through use of organisms maintaining nutrients and pests and requires no much input of fertilizer everything is done natural	**Specialization:** farmer has to borne the prices for additional inputs to increase the fertility of soil
Decreasing input use: number of inputs are required less under the Organic as it is done automatically due to use of Organic method to save fertility of soil	**Increasing input use:** to increase the fertility, farmer has to increase the number of inputs to retail the soil condition for the next crop production
Knowledge intensive: requires few resources but has to be trained properly for the use	**Input intensive:** requires time and method for the comprehensive list of chemicals
Holistic approach: balancing the ecosystem with sustainability	**Reductionist approach:** creating imbalance in the ecosystem satisfying in short at the cost of long-term gain

Graph-3.1 Operational Structure of National Programme for Organic Production (NPOP)



Organic Farming Centers in Karnataka

The following are the Organic centers situated at different places of Karnataka in the aim to establish in the promotion of Organic Farming across different role in the production of the Organic cultivation

A) Regional Centre of Organic Farming (RCOF)

NPOF is the National Project on Organic Farming a centrally planned scheme for the encouragement and promote the facility for the Organic Farming in the country. It was turned as National Centre of Organic Farming (NCOF) with its headquarter at Ghaziabad followed by its regional centres at Bhubaneswar, Imphal, Panchkula, Jabalpur, Nagpur and Bangalore established on 1st of October 2004 and its seventh regional centre build in Bihar on the year 2017.

Objectives:

1. Building technical capacity including all the stakeholders like HR, technological transfer, inputs biological etc.
2. Awareness creation

3. Nodal for the quality control for the produced Organic Farming
4. Technological development through innovation and research
5. Microbial maintenance for the supplement to the Organic Farming.
6. Promotion of agro waste generated at the Farming and home and also to promote low cost certification system.

B) Research Institute on Organic Farming (RIOF), Bengaluru

The RIOF with the aim to provide financial assistance under the banner of Rastriya Krishi Vikas Yojana (RKVY) established on 2007-08 at Bengaluru Agricultural Sciences University as a sub centre heading at UAS

Objectives

1. Validation of the Organic product through scientifically
2. Practice package developing for the Organic crops at various stages
3. Development of the various technologies for the production of Organic Farming
4. Helping to achieve diversified cropping system
5. Helping to establish suitable bio-fertilizers along with integrated Farming systems
6. To establish alternative land use system in the places of the degraded resources bases
7. To help in establishing link for the market for the Organic products
8. Promotion of the capacity building for the Organic Farmers overall

C) Organic Farming Research Institute (OFRI)

OFRI was established in the year 2013 with the view to adopt agricultural research station at Raichur with its sub centres situated at different places of Karnataka viz Bidar, Bimarayanagudi, Gangavathi, Kalburagi and Hagari.

Objectives:

1. Validation of survey, documentation and scientific approach for the practice of the Organic Farming
2. Specifying the long-term location, research for the Farmers oriented, demand driven, profitability and obviously for the productivity along with protocol for the health and standardize of Organic production
3. Diversification in the cropping system with suitable Organic Farming
4. Development of efficient microbial and other related to bio fertilizer and pest control
5. Techniques driven for the reduction in the Organic Farming cost
6. Supporting with periodical intervention and solutions to the issues aroused for the Farmers in the growth of the Organic agriculture production
7. Development of the human resource
8. To facilitate market linkage, certification and awareness to the Organic Farmers

D) University of Agriculture Sciences, Institute of Organic Farming (IOF)

Dharwad is one of the top most for the production of the Organic cultivation where the UAS (University of Agriculture Sciences) situated at Dharwad is the first to initiate in the country in terms of Organic Farming and its associate role in the research programme for the Organic Farming. It is currently funded by the Rastriya Krishi Vikas Yojana (RKVY) established on 2007-08 for the promotion of the Organic Farming in the state.

Objectives

1. To promote profitability, with productivity and sustainability along with its quality maintenance
2. To make a standard protocol for the production of Organic agriculture
3. Its main aim is to promote microbial strain, in the aim to reach to all the producers for the use and supply of Organic manures with quality assurance
4. Verification of survey and documentation on the knowledge of the Organic producer who are practicing in the indigenous manure
5. Promotion of the market certification and creation of awareness among the producer and the consumers in terms of basic human resource to meet the need of the existing Organic Farming system
6. Protocol in the name of the Organic production for the cropping systems and also for the different crops grown in the Organic agriculture.

E) Organic Farming Research Centre

OFRC situated at Navile in Shivamogga district established on 2007-08 funded by the NCOF and later started funding by central government. The sub centers are situated at the ZARS Bramahavara, Kathlagere, Ponnampete and Bhavikere. Thus, the main activities of the centers are spread across different climatic zones of the state including the focus given on dry and irrigation land in the hilly and coastal regions of the state.

Objectives

1. Documentation of the Organic Farming practices to the traditional and related practices for the local bio diversity
2. Validation of Organic products scientifically
3. Promotion of the dry lands with coastal and hilly regions for the irrigation facilities
4. To establish and build the up gradation of the technical capacity for the Farmers and all other related stockholders of the entire Farming system

Conclusion

In recent years consumers and policy makers have grown their interest on Organic crops and increasing concern on environmental issues due to that many innovations are going on Organic Farming method. Many of Farmers are following environment friendly method and it recognized for environmental benefits and cost of cultivation. This method has less input cost and higher returns. Government and NGO's are working for development of Organic Farming. And government has introduced many policies' regarding Organic Farming.

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Chapter – 4

Profile of the Study Area

Introduction

The study has focused upon the Gadag District in the state of Karnataka and country of India. Gadag is a split district from Dharwad District on 24th August 1997. Government of Karnataka Has framed as a new district. Gadag is mainly surrounded by Bagalkot, Dharwad, Haveri and Koppal Districts. Government has introduced recently two new taluks and now there are 7 Talukas in the district namely Gadag, Mundargi, Nargunda, Shirahatti, Ron, Gajendragada and Laxmeshwar. It has 11 revenue circles. It has 122 Gram Panchayats out of that 27 from Gadag taluk, 19-gram panchayats from mundargi taluk, 13 from Nargund taluk, 35 from Ron taluk and from shirhatti taluk 28-gram panchyats are Existing.

In the fields of art, literatures, spiritual, and industry it has its own heritage. And it is also best tourist place to visit. Gadag has famous in Printing it has many publishers and printing press. And Betgeri is sister city of Gadag which is famous for handlooms. And district has Krishi Vigyan Kendra at hulkoti which is near to city place and around 10 km from Gadag.

The District has more religious and historical importance. In the district Pandit Ganayaogi Panchakshari Gawayi music school is famous which is popularly known as Veereshwar Punyashrama it is providing Shelter, Food, Clothes, Protection and knowledge to the orphans and Blinds. And we can see many famous temples in the district like a Trikuteshwar which is built by the Chalukyas between 6th and 8th century and temple is dedicated to Goddess Saraswathi and one more famous temple of is Veeranarayan which is Mixture of Chalukya, Hoysala and Vijayanagar sculptures.

Gadag is primarily agrarian district. The district major economic activity is agriculture and allied activities. More than 64 per cent of population is settled in rural area. Horticulture, Sericulture, Animal husbandry and fisheries are the major allied activities to supplementary agricultural activities and most of the rural population is engaged themselves in dairy Farming.

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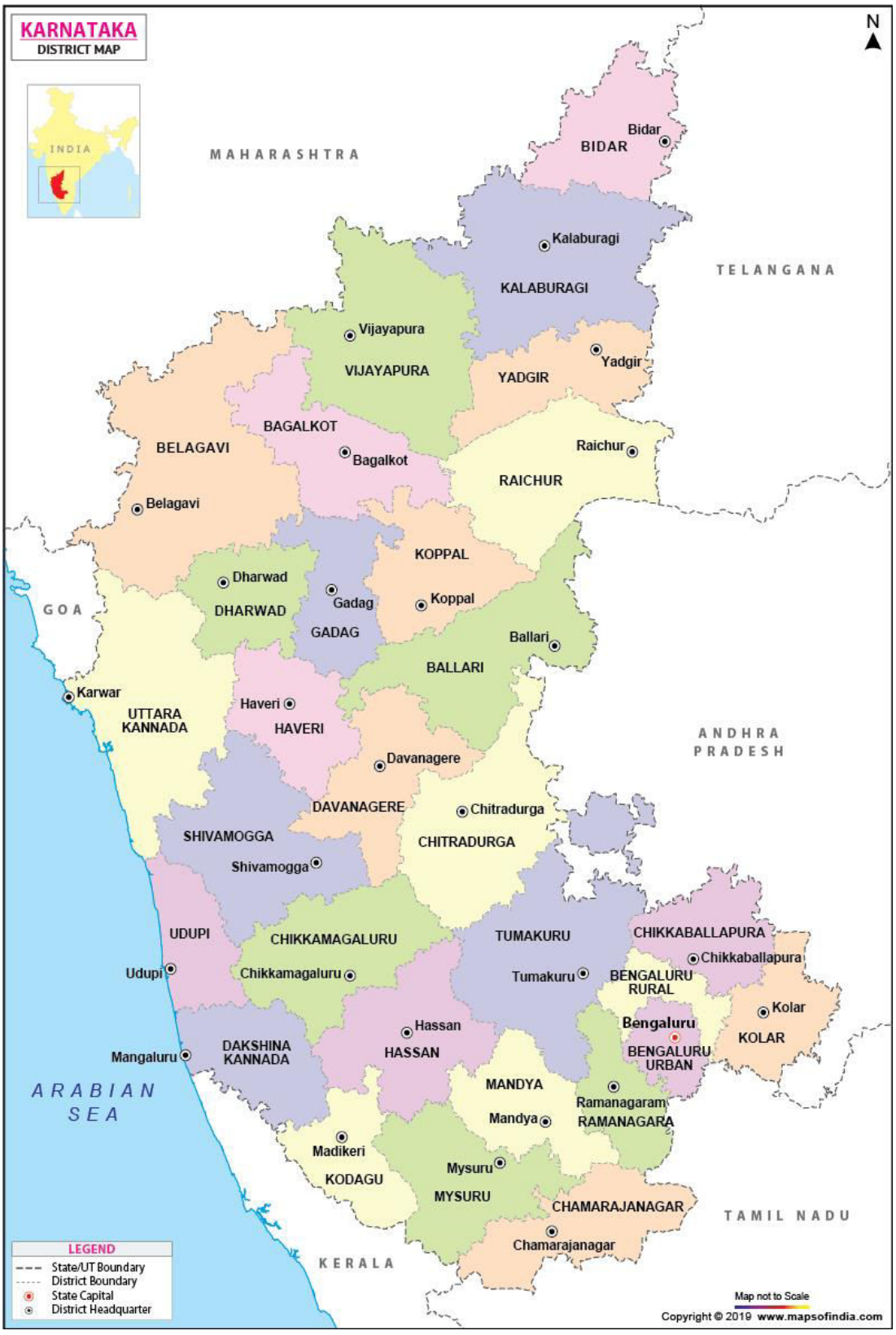
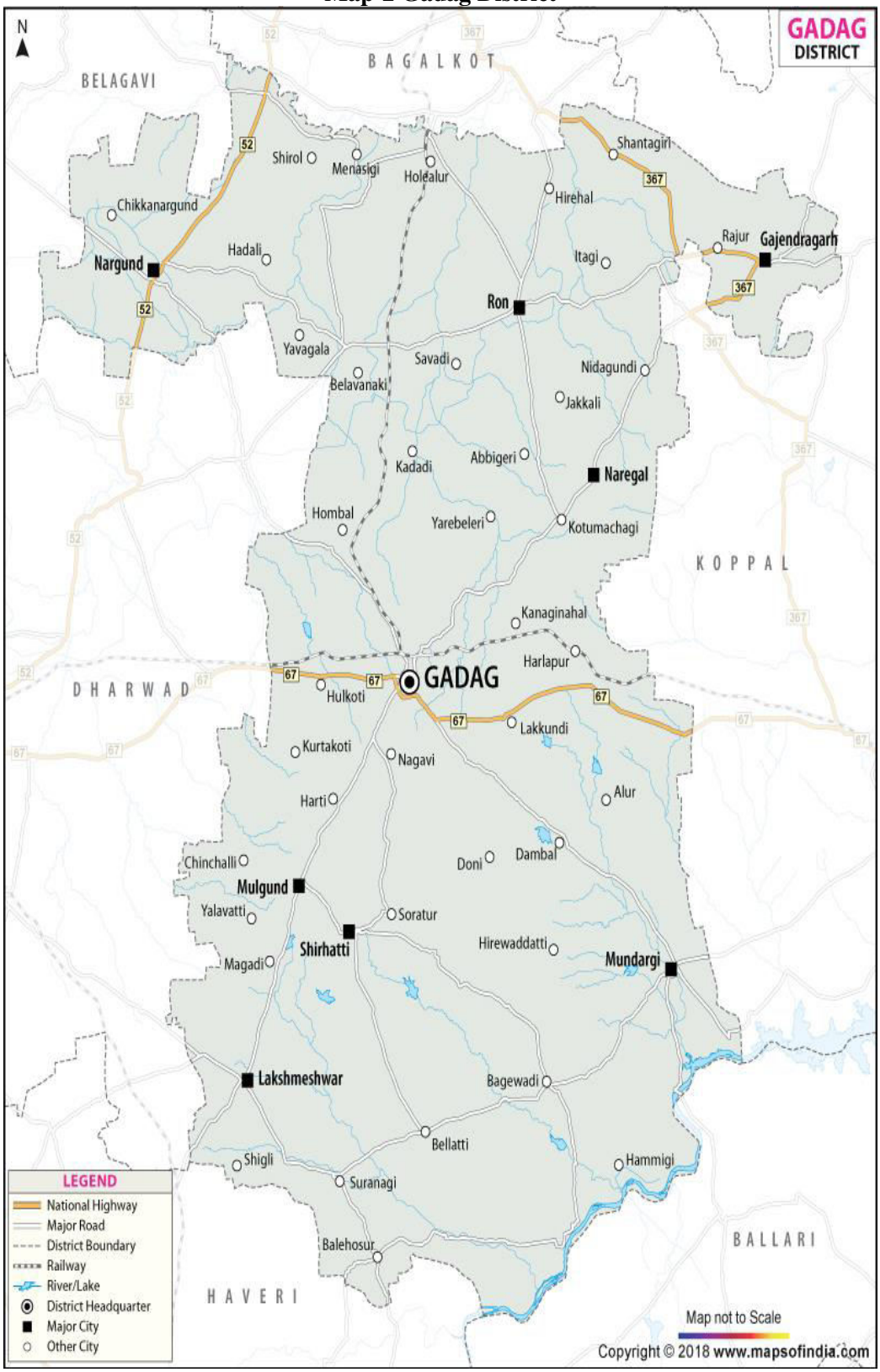
Map-1 Karnataka State



Map-2 Gadag District



Profile of the Study Area

In the study Area, Five Villages were selected for the survey, namely Shagoti (Gadag Taluk), Kallapur (Nargund Taluk), Sugnalli (Shirahatti Taluk), Kelur (Mundargi Taluk), and B.S. Beleri (Ron Taluk) which comes under the Gadag District of Karnataka state.

Map-3 Selected Taluks for Study

Source: Website

Sample Villages

Sample Villages were selected by the population and No of Farmers in the village by Farming method practices.

I. Shagoti

The Village Shagoti is located in Gadag Taluk. Approximately it is 14 km away from District headquarter. The total Geographical area of village is 659.32 hectares. Village has a total population of 2151 in this 1094 are males and 1057 are females and the number of houses is 469. Literacy rate of Shagoti is 79.13 per cent out of which 82.27 per cent males and 75.88 per cent females are literate. Total 282 Cultivators male and 17 females. Followed by 449 persons are agricultural labours out of 294 are male and 155 are females in Shagoti village.

II. Kallapur

Kallapur is a village which comes under Nargund taluk in the Gadag district. It is located approximately 82 km towards North from district headquarters. And approximately it is 22 km from Nargund taluk. The total geographical area of village is 1,017.26 hectares. The total population is 1675 and number of houses are 309. Among this village literacy rate is 68.17 per cent and out of the male literacy rate is 57.79 per cent and female literacy rate 42.20 per cent. There were 201 cultivators the out of the 198 were males and 3 are females. The agricultural labourers are 215 in these 127 males and 88 are females.

III. Sugnalli

Sugnalli is a small village in Shirahatti taluk Gadag district. Village has 1494.89 hectares geographical area. It is located approximately 44 km towards from district headquarters. And approximately 13 km from taluk place of Shirahatti. In the village total population is 1950 out of these 1020 are males and 930 are females. There were 1159 persons are literates in that 717 are males and 442 females are literates. Cultivators in the village are 415 in this 391 are males and 24 are females and accounted agricultural labourers are 452 out of which are 187 males and 265 are females.

IV. Kelur

The kelur is a remote area of Mundargi taluk Gadag district. The total geographical area of village is 1217.51 hectares. It is approximately 39 km from district headquarter and 6 km from Mundargi taluk. As per 2011 census total population is 647 people, out of that 323 male population and 324 is female population. There are about 138 houses in the village. In the village 191 there are cultivators.

V. B.S. Beleri

This village comes under Ron taluk of Gadag district. The total geographical area of village is 221.27 hectares. In the village population is 995 peoples, out of which male population is 495 and female population is 500. There are about 218 houses in B. S. Beleri village. It is situated approximately 14 km away from Ron taluk and approximately 86 km away from district headquarter Gadag.

Above explained villages are having one of the special futures that is adoption of Organic Farming. In all the villages we can see Organic crop growers. They are having organisations and also with the guidance and assistance of NGO's many Farmers adopted Organic Farming method. They are attending meeting and training programs related to Organic Farming method. Most of the members Farmers are getting financial and non-financial assistance from NGO's.

Table-4.1 Demographic Profile of the Karnataka and Gadag District

Sl. No.	Particulars	Units	Karnataka	Gadag
1	Total Population	2011 Census	61095297	1064570
2	Density	2011(Per Sq. kms)	319	229
3	Rural Population	2011 Census	37469335	685261
4	Urban population	2011 Census	33625962	379309
5	Total Workers	2011 Census	27872597	495722
6	No of Cultivators	2011 Census	6580649	127441
7	Total Geographical Area	In Hectares	19049836	465715
8	Forest Area	In Hectares	3071833	32614
9	Net Area Sown	In Hectares	9941399	349686
10	Total Sown Area	In Hectares	12059367	423102
11	Net Area irrigated	In Hectares	3440425	79017
12	Total Banks	In No's	4164	140
13	Primary Schools	In No's	60036	850
14	High Schools	In No's	14194	282
15	Literacy	2011 Census	77.61 percent	75.12 percent
16	Government Hospitals	In No's	2739	46

Source: Gadag District at Glance 2017-18

Note: Above shown are as per 2011 Census

Area

Gadag district is located in the central sector of the northern half of Karnataka state and total geographical area of Gadag is 465715 hectares and it stands at 22nd place in the state in terms of area.

Population

As per 2011 census the Gadag district had a population of 10, 64,570. The rural and urban population of the district is 685261 and 379309 respectively. In the district male population is 537147 and female population is 527423.

Table-4.2 Basic Features of Gadag district

Sl. No.	Particulars	Details of Particulars
1	Total Population	10,64,570
2	Rural Population	685261
3	Urban Population	379303
4	Male Population	537147
5	Female population	527423

Source: Gadag District at a Glance 2018-19

Climate

The climate condition of the district is pleasant weather. Temperature of the district is in the range of 20° and 42° Celsius and maximum of 42° Celsius and 11° Celsius in respect of summer and winter season.

Agriculture

Gadag has good agriculture profile. In the district Major growing food crops are Wheat, Jowar, Maize, Bengal gram, Green gram and Horticulture crops are Mango, Sapota, Grapes, Banana, Pomegranate, Tomato, Amla, Onion and Commercial crops of district are sugarcane and cotton. According to 2017-18 annual seasons and crop report total sown area is 505841 hectares. As per

2011 census 66.1 per cent of workers are engaging under agriculture sector. And also, it provides maximum job opportunities in the district.

Table-4.3 Details of Agricultural cultivators and Agricultural labourers in the district
(In Numbers)

Sl. No.	Talukas	Agricultural Cultivators of Rural	Agricultural Cultivators of Urban	Total Cultivators	Agricultural labourers of Rural	Agricultural labourers of Urban	Total Agricultural labours
1	Gadag	26499	3450	29949	42084	7553	49637
2	Gajendragad	9040	2410	11450	15235	4459	19694
3	Laxmeshwar	9872	2045	11917	19721	4140	23861
4	Mundargi	18305	1119	19424	28064	2325	30389
5	Naragund	15714	2749	18463	12428	5158	17586
6	Ron	22784	1885	24669	32220	2934	35154
7	Shirahatti	10958	611	11569	21044	2945	23989
Total		**113172**	**14269**	**127441**	**170796**	**29514**	**200310**

Source: Gadag District at a Glance 2018-19

Above table-4.3 shows total cultivators and agricultural labours of taluks. In the district rural agricultural cultivators (113172) are more comparing to urban cultivators (14269) and total cultivators of the seven taluks are 127441. Agricultural labourers of rural (170796) strength is highest compared to urban (29514) and total 200310 agricultural labours are engaging in the agriculture sector.

Irrigation and Rainfall

Irrigation and Rain fall plays an important role in the crops production in the district. The maximum part of the district is dependent on rains for agriculture activities. District has Malaprabha and Tungabadra major irrigation projects these are the providing irrigation facilities to Farmers. In the study area total 16 Rain gauge stations are working and Annual normal rainfall of district is 641 mm from the year 1951 to 2000.

Gadag had 105 km canals length, which covers 26903 hectares irrigated area and 21 tanks with 1379 hectares irrigated area. District had 2198 wells and it covers 457 hectares irrigated area. Total 13585 tube wells and 10 lift irrigations are major source of the irrigation of district.

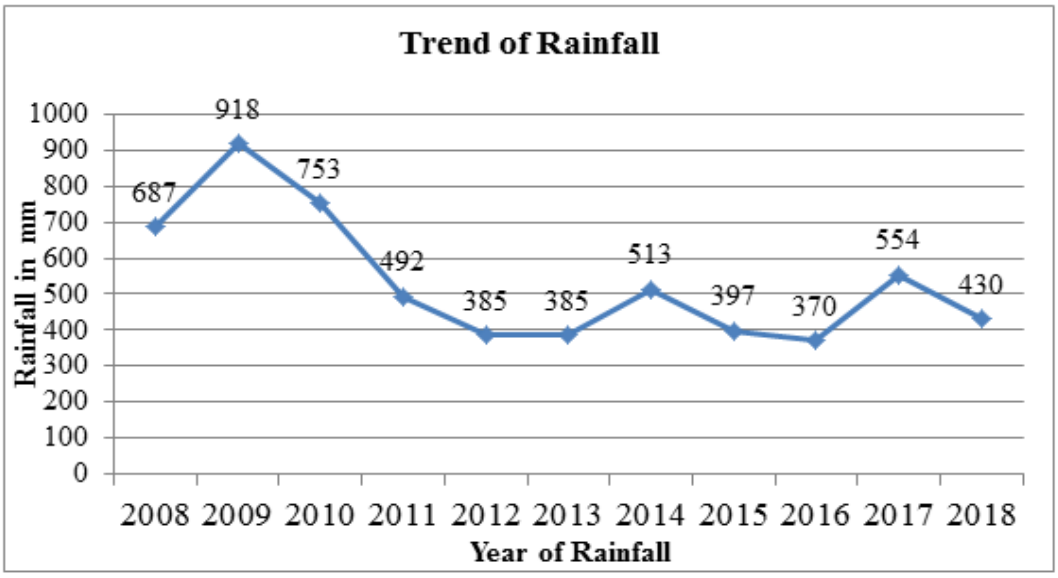
Table-4.4 Details of Annual Rainfall in the district by Taluks

Sl. No.	Taluks	Actual Annual Rain fall of Taluk Centers from 2008 to 2018 (In mm)										
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
1	Gadag	775	804	856	539	412	618	775	405	310	530	588
2	Mundargi	553	750	680	416	359	473	572	303	228	531	306
3	Nargund	615	906	730	449	346	480	796	430	457	686	451
4	Ron	914	1167	730	426	299	477	510	424	415	533	421
5	Shirahatti	577	961	769	631	510	518	869	421	439	488	501
Total		687	918	753	492	385	385	513	397	370	554	430

Source: Gadag District at a Glance 2018-19

The Average Annual rainfall of the Gadag District is 430 mms in the year 2018, with 41 rainy days. Usually rainfall occurs in the month of June to September. In the district taluk to taluka rainfall varies. In the year 2018 highest rain was in Gadag taluk 588 mms. Followed by Lowest rainfall was accrued in the Mundargi taluk 306 mms.

Fig-4.1 Rainfall of the District (In mm)



Source: Gadag District at a Glance 2018-19

Fig-4.1 shows the trend of the rainfall in the district from 2008 to 2018. In these years, highest rainfall was accrued in the year 2009 (918 mm) and lowest rainfall was in the year 2016 (370 mm). Though in the district rainfall is fluctuating by year to year.

Live Stock Resources

Livestock is an important source of income for Farmers. And it provides regular employment to Farmers. Every farmer usually possesses at least a pair of bullocks. In the agriculture field bullocks and buffaloes are used for heavier work. Cows are kept for milk production. The district depends for milk supply more on cows and buffaloes. In Gadag dairy Farming is an important economic activity.

Table-4.5 Distribution of livestock population in Gadag district

Sl. No.	Name of the Livestock	Total Livestock
1	Cattle	142655
2	Buffaloes	60989
3	Sheep	259047
4	Goats	106353
5	Pigs	6569
6	Rabbits	341
7	Dogs	16711
8	Others	311
Total Livestock		**592976**
Total Poultry		**156275**

Source: Livestock census 2012 and Gadag district at glance 2018-19

It is estimated that there are 142655 Cattles and 60989 buffaloes. Among livestock 259047 sheep, 106353 goats, 6569 pigs, 341 rabbits and 16711 Dogs are there in the district. And poultry is also one of the income sources for Farmers and there are 156275 total poultry. Milk Processing and milk powder manufacturing units are sustaining the Farmers and also contributing for their growth.

Soil

In the district two types of soils are noticed. One is black soil and another one is red soil. The maximum part of the district is found having black soil. District major part of land covered by entisols and vertisols and small is covered by alfisols.

Forestry

The district has good forest wealth. And district has limited share of forest area, which is principally shrubby. It occupies about 7 per cent of the total geographical area. Large number of parts it belongs to the Shrub Category.

Trade and Commerce

Trade and commerce are the backbone of the economy of a district. And it is the most important source of livelihood for the people. For trade, Gadag, Mundargi, and Nargunda taluks are important centres within the district. From district most important exporting commodity is cotton and wholesale cotton markets are located at Gadag and Nargund. Agricultural products exported from district are ground nut, cotton seeds, chillies, betel nuts. For exchange of goods and commodities regulated market plays an important role in the district.

Industries

Gadag has few small-scale industries like textiles, electrical, food, Mechanical engineering, wood, paper and printing etc. Mundargi taluk has one sugar industry, Laxmeshwar taluk has one spinning mill and Gadag taluk has one oil industry and as well as textile and spinning mill. Few agro based industrial units are working. Good numbers of cotton and handloom industries are there in the district.

Table-4.6 Industries and Employees in Gadag district as on 31-03-2019

Sl. No.	Name of the Industry	Total Number of Industries	Total Workers
1	Readymade Garments	14	58
2	Textiles	15	1267
3	Engineering	18	1197
4	Other	77	2126
Total		**124**	**4648**

Source: Gadag District at a Glance 2018-19

There were 124 industries are working which are providing employment opportunities to 4648 people and in the district human resource and infrastructure facilities are utilizing for the development of industry sector in the district.

Hospitals

In the district as on 31-3-2019 577 hospitals are active with 2280 beds. Totally 691 Doctors are available in the district. Among them 121 are government Doctors and 570 are Private Doctors. 368 Medical shops and 2 blood banks are working for supply of blood to the needy people. One government medical college and four taluk hospitals are working in the district. And 43 primary hospitals and 51 allopathic hospitals are providing health facilities to people.

Schools and Colleges

The district had 302 lower primary schools with total student's strength 97708 and 627 higher primary schools with 54488 students. There were 323 high schools with 30835 students and 101 Pre university colleges with 21562 students. The district had 24 general degree colleges with 10172 students, 5 medicine colleges 1071 students, 1 allopathic Medical college with 598 students are studying. There are 7 polytechnic colleges with 821 students and 3 engineering colleges with 728 students. It has good educational institutions in the district.

Banking

Banking is very important for agriculture, trade and commerce and industries. District has public sector banks, Regional Rural Banks, Private Sector Banks which are providing many financial services to people. And many Branches are Computerized in the district it is useful for fast and easy financial transactions.

Table-4.7 Bank Branches in the Gadag District

Sl. No.	Agency	Number of Branches (as per 2018-19 Financial year)
1	Regional Rural Banks	60
2	Public sector Banks	103
3	Private sector Banks	10
4	D.C.C Banks	07
5	P.L.D Banks	05

Source: Gadag district at Glance 2018-19

In the district Regional Rural Bank Distributed 92588 Lakhs loan for Agriculture and 32241 Lakhs other loan. D.C.C. Bank distributed 7550.54 Lakhs loan for agriculture. And P.L.D Bank Distributed 3389.52 Lakhs loan for agriculture sector.

Transportation and Communication

Gadag district is well connected with road and rail transportation. District includes national highway with 103.57 kms, state highway with 685.60 kms and district roads with 1171.74 kms. The village roads are generally appearing roads from main roads to villages. There are about 3911.68 kms. These roads are main line of connectivity to all the scattered villages.

There were highest number of two wheelers (1, 46,186) in the district comparing to other vehicles and total 16183 tractors and 10854 tillers are functioning. 9350 cars, 8737 goods vehicles, 5103 auto rickshaws, 2599 taxies, 1364 buses, 858 Omni buses and 412 jeeps are there in the district.

Table-4.8 Information of the district transportation

Sl. No.	Motor vehicles	Number of vehicles
1	Goods Vehicles	8737
2	Buses	1364
3	Taxies	2599
4	Auto Rickshaws	5103
5	Two wheelers	146186
6	Cars	9350
7	Jeeps	412
8	Omni buses	858
9	Tractor	16183
10	Tillers	10854

Source: Gadag district at Glance 2018-19

Railways

Gadag is well connected by train and it has own railway station and 92 kms length of railway lines are there, respectively Gadag 66 kms, Mundaragi 4 kms and Ron 22 kms.

Communication

There are 168 Post Offices and 50 Telephone exchanges centres. As on 31-03-2019 there are 7782 telephones, 112454 Mobile phones in the district and 2711 internet broad band connection are there in the district.

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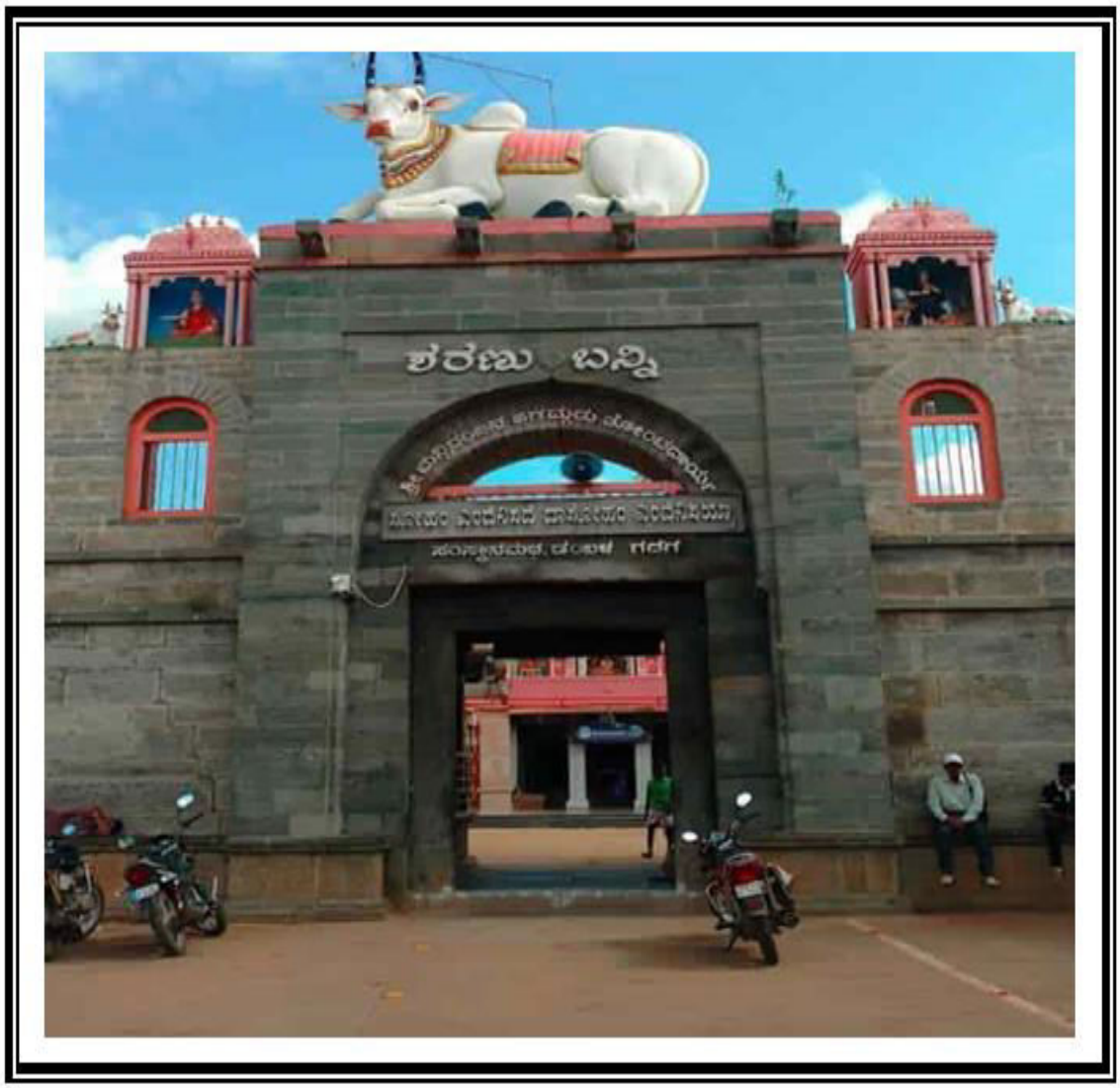
Tourist Attraction

Gadag is a tourist place. Tontadarya matha is an attractive place of devotional in the city. Gadag has many temples one of the most popular temples is Trikuteshwar it is lord shiva temple, it was built by architect Jakanachari and veeranarayan temple built in vijaynagar style and dedicated to lord shiva. Dambal village has doddabasappa temple, which is situated 21 km from Gadag. It is dedicated to lord Ishwara. One of the famous temples in laxmeshwar taluka is someshwar, as well as Shirahatti taluka has famous Fakireshwar matha.

Gajendragada is newly established taluk of Gadag district. In this taluk chatrapatti shivaji Maharaj built fort is historically famous and it has famous kalkaleshwar temple of lord Shiva (Known as Dakshina kashi), Mundargi taluk has kappata gudda which is 30 Kms from Gadag and it is a medium size hill (750 Meters in height) it covers medicine plants this is one of the most useful place. Singtalur Village is a bank of Tungabhadra River, and it is known for Veerabhadreshwar Temple which is 57 kms from head quarter of district.

Tontadarya Matha
Gadag



Kalkaleshwar Temple
Gajendragada Taluk

Literacy

As per 2011 census in the district total 700177 literates are there out of that male literates are 397178 followed by female literates are 302999. District has 4, 29,673 rural literates and 2, 70,504 urban literates. In all the seven taluks Gadag taluk has highest literates (2, 55,364) comparing to other taluks. Shirahatti has fewer literates (57,054) in the district.

Electricity and Power

Electricity is distributed to all the taluks from Gadag main distribution centre. Total 83,526 Bhagya jyothi and Kutir jyothi Beneficiaries and 2, 73,910 Domestic consumers are there and total 6572 industries, as well as 40,860 irrigation pump sets are getting power supply by Karnataka electricity board Gadag. Wind power production is also going on in the district.

Rivers and Drainage

Gadag is a part of Krishna basin it has divided into two sub basins namely malaprabha and Tungbhadra. These are the most important for agriculture activities in the district. Many Farmers are dependent on these rivers. Malaprabha River covers the Nargund and Ron taluks. It originates in Kankumbi of Shayadri peak of Belgaum District and enters in the Gadag distirict near Lakamapur Village of Nargunda Taluk and flows in the north of Gadag. Tungabhadar River covers the Mundargi and Shirahatti taluks and provides irrigation facilities to Farmers.

Conclusion

The Development of Gadag district during the last few decades is impressive. Agriculture is the primary occupation of the population. The district is famous for temples and tourist places. In the city many printing presses are working so only it is famous in printing.

It has two rivers which are providing sufficient irrigation facilities to Farmers for agricultural activities. It has Zoo, forest area and medicine plant hill which is called Kapata Gudda.

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Chapter - 5

Comparative Study of Organic and Inorganic Farming

Introduction

Farming is a process it includes preparation of soil, sowing, adding manure, irrigation, harvesting and storage. This chapter is based on primary data and it has divided into two parts, the first part presents general information like type of Farmers, age, caste, type of family, education, marital status, Occupation, Livestock and other assets, and income of the Farmers etc., of both the Organic and Inorganic Farmers. Socio-Economic status may influence their future achievements in the agriculture.

The second part discusses crop, yield, production, price, cost of cultivation, and marketing cost etc., of both the Farming method. The study would help to understand the similarities and difference between the Organic and Inorganic Farming.

Part-I

Socio-Economic Condition of Farmers

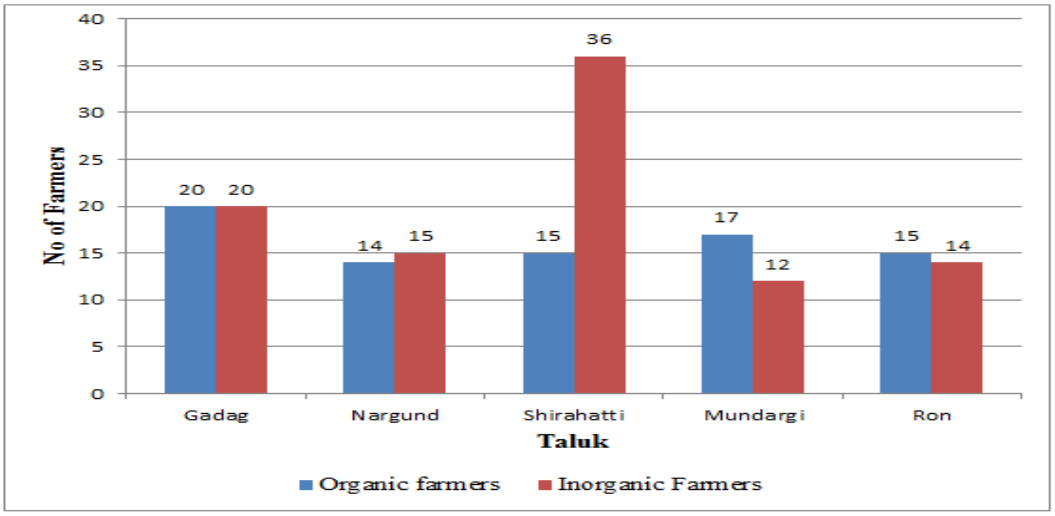
In the part–I section socio economic status of Organic and Inorganic farmer's information has been analysed on various factors and discussed detailed in the below tables.

Table-5.1 Sample Farmers Respondents in the study Area

Sl. No.	Talukas	Organic Farming		Inorganic Farming		Organic and Inorganic Farming	
		Respondents	Percentage	Respondents	Percentage	Total	Percentage
1	Gadag	20	11.24	20	11.24	40	22.47
2	Nargund	14	7.87	15	8.43	29	16.29
3	Shirahatti	15	8.43	36	20.22	51	28.65
4	Mundargi	17	9.55	12	6.74	29	16.29
5	Ron	15	8.43	14	7.87	29	16.29
Total		**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.1 Distribution of Sample Farmers in Organic and Inorganic method



Source: Field Survey

Table-5.1 and fig 5.1 classify that distribution of sample farmers according to talukas and Farming method. Shirahatti taluk has highest sample size 28.65 per cent in that Organic Farmers are 8.43 per cent and 20.22 per cent from Inorganic, and from Gadag taluk total 22.47 per cent Farmers out of that from 11.24 per cent Organic and 11.24 from Inorganic, and three taluks namely Naragund, Mundargi, and Ron has respectively 16.29 per cent Farmers, out of sample Farmers 7.87, 9.55, 8.43 Organic and 8.43, 6.74, 7.87 from Inorganic Farming respectively. The

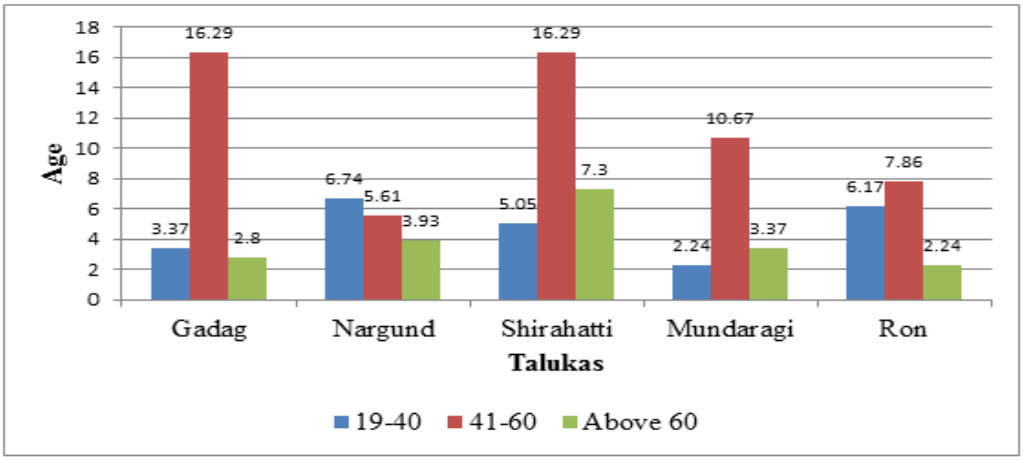
totally 178 sample Farmers were selected from 5 taluks of Gadag district. It can be observed that the 45.51 per cent of the respondents belong to Organic and 54.49 per cent of farmers belong to Inorganic farming method.

Table 5.2 Taluk wise Age Group of the Respondents

Talukas	Age Group of the Respondents							
	19-40		41-60		Above 60		Total	
	In No's	In Percentage	In No's	In Percentage	In No's	In Percentage	In No's	In Percentage
Gadag	6	3.37	29	16.29	5	2.80	40	22.47
Nargund	12	6.74	10	5.61	7	3.93	29	16.29
Shirahatti	9	5.05	29	16.29	13	7.30	51	28.65
Mundaragi	4	2.24	19	10.67	6	3.37	29	16.29
Ron	11	6.17	14	7.86	4	2.24	29	16.29
Total	**42**	**23.59**	**101**	**56.74**	**35**	**19.66**	**178**	**100**

Source: Field Survey

Fig-5.2 Distribution of Age group of the respondents



Source: Field Survey

The table 5.2 and fig 5.2 has shown classification of age group of Farmers. Farmer 41-60 age group are the dominant group with 56.7 per cent in the study and second place 19-40 age group Farmers are 23.6 per cent and above 60 years 19.7 per cent Farmers are there in the study.

It is observed that the highest in the 10-40 age group Nargund taluk has more Farmers and less in the group Mundargi taluk. Gadag and Shirahatti taluks have more 41-60 years age Farmers; Nargund has fewer Farmers in the group. Shirahatti has more Farmers of above 60 years age and Ron taluk has less in these age group Farmers in the study area.

Table-5.3 Distribution of Sample Farmers according to Social Group

Social Group	Talukas					Total
	Gadag	Naragund	Shirahatti	Mundargi	Ron	
SC	1	0	6	3	0	10
ST	4	1	7	10	1	23
OBC	22	21	20	12	26	101
Minorities	0	0	2	0	1	3
GM	13	7	16	4	1	41
Total	**40**	**29**	**51**	**29**	**29**	**178**

Source: Field Survey

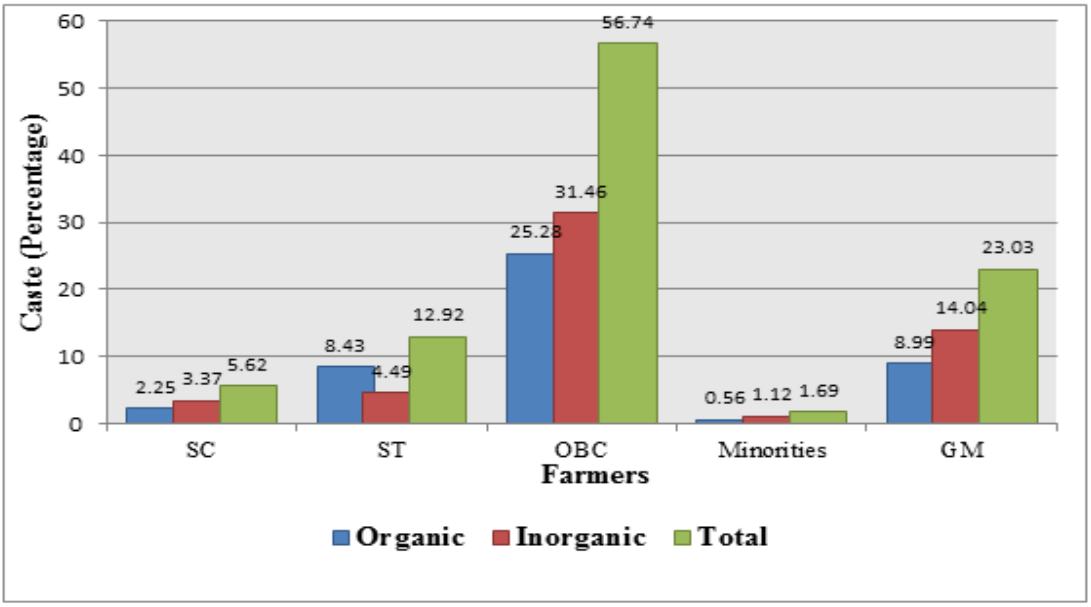
Table-5.3 shows the taluk wise distribution of sample Farmers according to caste. Comparatively to other taluks Shirahatti taluk has more SC, Minorities and GM respondents respectively. Mundaragi taluk has more ST respondents, and Ron taluk has more OBC respondents. In the Naragund and Ron taluk there are no SC caste respondents and also Gadag, Naragund and Mundargi taluks are not having Minorities respondents.

Table-5.4 Distribution of Sample farmer's caste according to Organic and Inorganic farmer's

Social Group	Organic Farmers		Inorganic Farmers		Organic and Inorganic Farming	
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
SC	4	2.25	6	3.37	10	5.62
ST	15	8.43	8	4.49	23	12.92
OBC	45	25.28	56	31.46	101	56.74
Minorities	1	0.56	2	1.12	3	1.69
GM	16	8.99	25	14.04	41	23.03
Total	81	45.51	97	54.49	178	100

Source: Field Survey

Fig-5.3 Distribution of Sample Farmers according to Social Group



Source: Field Survey

Table-5.4 provides the caste wise distribution of Farmers. The SC 2.25 per cent,8.43 per cent,25.28 per cent,0.56 per cent, and 8.99 per cent of the respondents belong to SC, ST, OBC, Minorities and GM caste respectively in the Organic Farming respondents.

With respect to Inorganic Farming respondents 3.37 per cent of respondents belong to SC, 4.49 per cent of respondents belong to ST, and 31.46 per cent of the respondents belong to OBC, 1.12 per cent of minorities and 14.04 per cent respondents belong to General merit in the study.

Fig 5.3 shows total percentage of caste. It shows that 5.62 per cent of SC respondants,12.92 per cent respondents belong to ST, and it is observed that majority of respondents belong to OBC 56.74 per cent and less respondents belong to minorities 1.69 per cent and 23.03 per cent respondents belong General merit.

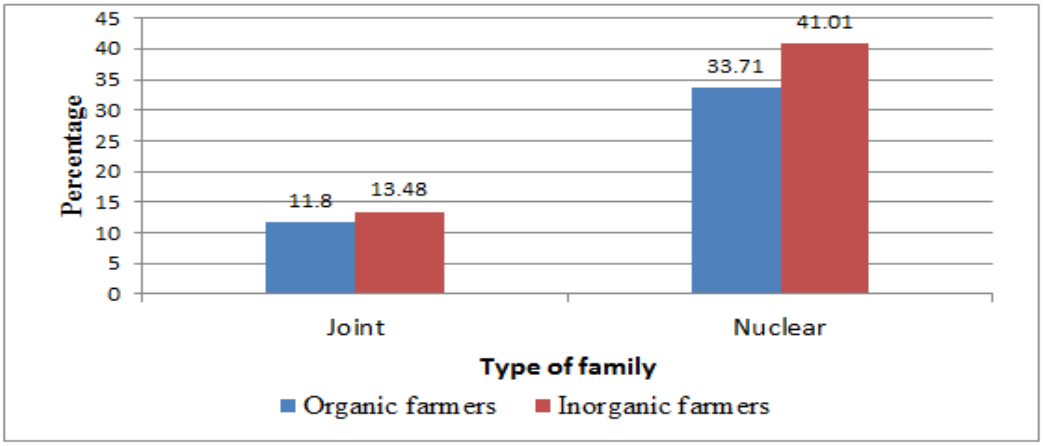
Table-5.5 Distribution of Sample Farmers according to Type of Family

Type Of Farmers	Joint Family		Nuclear Family		Organic and Inorganic Farming	
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Organic	21	11.80	60	33.71	81	45.51
Inorganic	24	13.48	73	41.01	97	54.49
Total	**45**	**25.28**	**133**	**74.72**	**178**	**100**

Source: Field Survey

Table-5.5 Indicates that distribution of sample Farmers according to type of family it is found that 25.28 per cent of Farmers belong to joint family and 74.72 per cent of families belong to nuclear family.

Fig-5.4 Percentage Distribution of Sample Farmers according to Type of Family



Source: Field Survey

Fig-5.4 shows that 11.80 per cent of organic farmers belong to joint family and 33. 71 per cent of Farmers belong to nuclear family. And also, from Inorganic Farmers 13.48 per cent of families belong to joint family and 41. 01 per cent of families belong to nuclear family.

Table-5.6 Distribution of Sample Farmers according to Type of Family by Taluka wise

Taluk	Type of Family	Organic Farmers		Inorganic Farmers		Organic and Inorganic Farmers	
		In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Gadag	Joint family	03	1.68	02	1.12	05	2.80
	Nuclear family	17	9.55	18	10.11	35	19.66
Naragund	Joint family	08	4.49	7	3.93	15	8.42
	Nuclear family	06	3.37	8	4.49	14	7.86
Shirahatti	Joint family	05	2.80	12	6.74	17	9.55
	Nuclear family	10	5.61	24	13.48	34	19.10
Mundargi	Joint family	03	1.68	00	0	03	1.68
	Nuclear family	14	7.86	12	6.74	26	14.60
Ron	Joint family	02	1.12	03	1.68	05	2.80
	Nuclear family	13	7.30	11	6.17	24	13.48
Total		**81**	**45.50**	**97**	**54.49**	**178**	**100**

Source: Field Survey

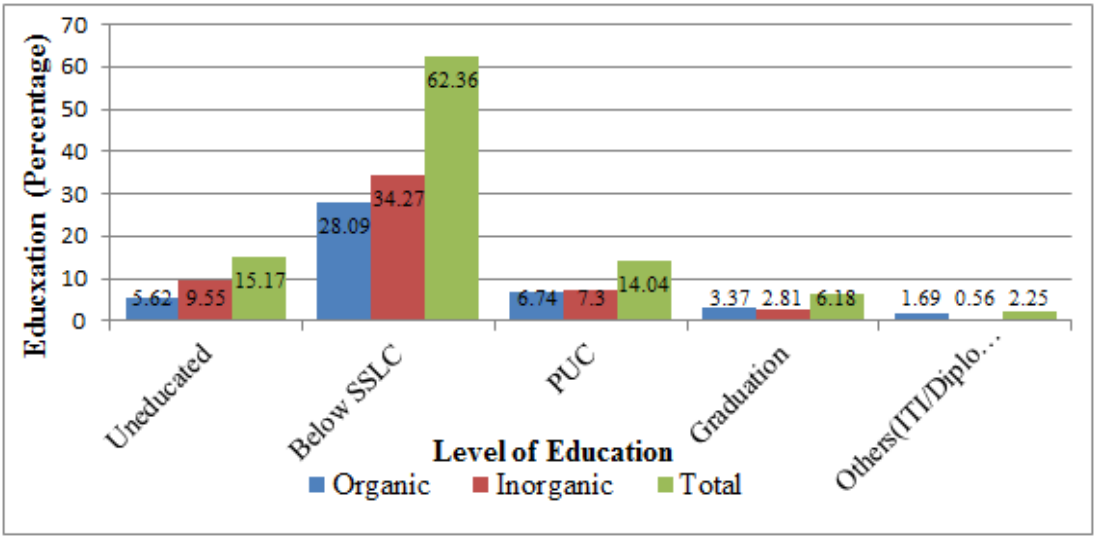
Table-5.6 shows type of family's in the study area. It is found that Gadag, Shirahatti, Mundaragi and Ron taluks has more Nuclear families. Naragund and Shirahatti taluks have more Joint families respectively.

Table-5.7 Distribution of Sample Farmers according to Education

Education	Organic Farmers		Inorganic Farmers		Organic and Inorganic Farming	
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Uneducated	10	5.62	17	9.55	27	15.17
Below SSLC	50	28.09	61	34.27	111	62.36
PUC	12	6.74	13	7.30	25	14.04
Graduation	6	3.37	5	2.81	11	6.18
Others(ITI/Diploma)	3	1.69	1	0.56	4	2.25
Total	**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.5 Distribution of Sample Farmers according to Education



Source: Field Survey

Education is a special factor for develop an agricultural activity and it is supporting for adoption of innovation methods and implementation of new agriculture technology.in agricultural practices. Now a day in the changed time and trend education is most important for everyone.

Table-5.7 found that distribution of sample Farmers as per the education level. The level of education is classified into five categories. It is seen that Organic Farmers education level is 28.09 per cent in Below SSLC education and 6.74 per cent Farmers have PUC and 3.37 per cent Farmers completed graduation, 1.69 per cent other education like Diploma technical and only 5.62 per cent of illiterates are there in the study area.

The Inorganic farmer's education level is 34.27 per cent in Below SSLC and 7.30 per cent Farmers have studied PUC, 2.81 per cent of Farmers completed their graduation and 0.56 per cent of Farmers completed other education like ITI. Only 9.55 per cent of the respondents are illiterates.

Fig-5.5 shows distribution of total percentage of farmer's education level. It is found that 62.36 per cent of Farmers are have Below SSLC education level and 14.04 per cent of Farmers have completed puc,6.18 per cent Farmers have completed their graduation and 2.25 per cent of Farmers are completed their technical education like ITI and Diploma. And it is observed that 15.17 per cent of Farmers are illiterates in the study.

Table-5.8 Distribution of sample Farmers according to marital status

Marital Status	Type of Farmers					
	Organic Farmers		Inorganic Farmers		Organic and Inorganic Farmers	
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Married	74	41.57	91	51.12	165	92.70
Unmarried	7	3.93	6	3.37	13	7.30
Total	**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Table-5.8 shows marital status of sample Farmers. It is classifying in to two categories of married and unmarried for understanding the marital status of two types of Farmers. Out of the total 45.51 per cent of respondents from Organic where 41.57 per cent are married similarly in case of Inorganic total 54.49 per cent of respondents 51.12 per cent of Farmers are married. With the comparison from both Organic and Inorganic married are more from Inorganic Farmers.

Table-5.9 Distribution of Sample Farmers by Occupation in the study area

Occupation	Type of Farmers					
	Organic Farmers		Inorganic Farmers		Organic and Inorganic Farmers	
	In No's	In percentage	In No's	In percentage	Total No's	Total Percentage
Main Occupation						
Agriculture and Agriculture allied activities	73	41.01	87	48.87	160	89.9
Subsidiary Occupation						
Construction work	0	0	1	0.56	1	0.56
Dairy	1	0.56	0	0	01	0.56
Driving	2	1.12	3	1.68	5	2.8
Kirani Shop	0	0	2	1.12	2	1.1
Govt. Peon	1	0.56	0	0	1	0.56
Kooli	0	0	1	0.56	1	0.56
Motor Winding Work	1	0.56	0	0	1	0.56
Painting	0	0	1	0.56	1	0.56
Private Job	2	1.12	1	0.56	3	1.7
Teacher	1	0.56	0	0	1	0.56
Watermen	0	0	1	0.56	1	0.56
Total	**81**	**45.50**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Table-5.9 Highlights Farmer's Primary and Secondary occupation. It is clear that 89.9 per cent of farmer's majorly dependent on agriculture either Organic or Inorganic as their occupation that constitutes around 89.9 per cent. However, the subsidiary activities carried out by these Farmers are also important as they become the alternative source of income generations. Almost 2.8 per cent of Farmers have the occupation of driving followed by private job, to the next kirani shops and to the last includes like construction work, dairy, cooli, painting teacher

watermen etc. Almost 45.50 per cent of Farmers belonging to Organic Farmers and 54.49 per cent from Inorganic Farmers are dependent on subsidiary occupation. This refers that many of the Organic Farmers could generate sufficient income to support the family.

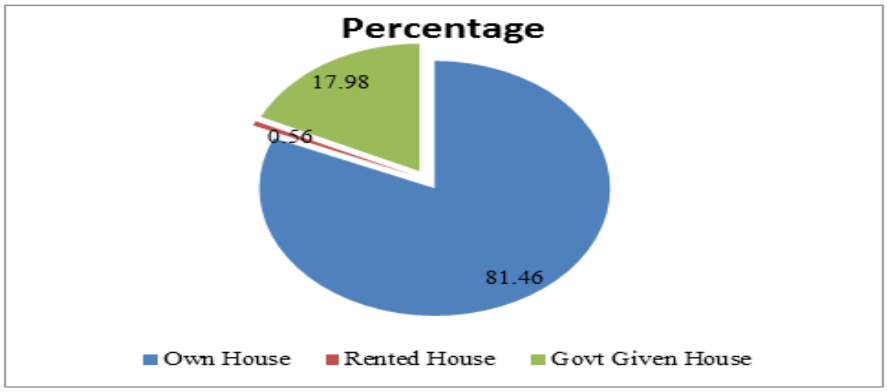
Table-5.10 Distribution of Farmers by Housing Ownership

Particular	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In No's	In percentage	In No's	In percentage	Total No's	Total Percentage
Own House	65	36.51	80	44.94	145	81.46
Rented House	1	0.56	0	0	1	0.56
Govt Given House	15	8.42	17	9.55	32	17.98
Total	**81**	**45.50**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Table 5.10 Highlights ownership of house by categorizing into owned, rented and aided by govt. It is clear that number of Farmers are owning owned house by 81.46 per cent, out of which 44.94 per cent from Inorganic Farmers and 36.51 per cent from Organic Farmers. Likewise, government constructed houses come by 17.98 per cent where highest is from Inorganic Farmers.

Fig-5.6 Percentage Distribution of Farmers by Housing Ownership



Source: Field Survey

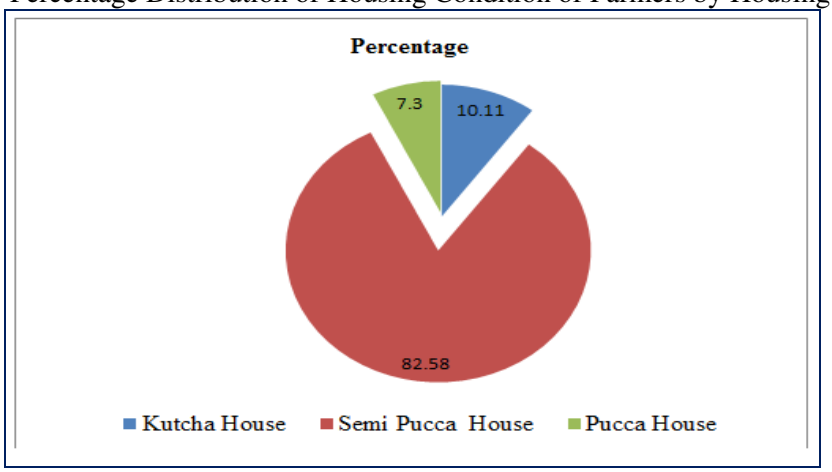
Fig-5.6 depicts the house ownership by percentage of Farmers no doubt majority of Farmers owning own house (81.46 per cent) out of which Inorganic Farmers constitutes highest followed by government constructed houses (17.58 per cent) and to the least rent house (0.56 per cent).

Table-5.11 Distribution of Housing Condition of Farmers by Housing Status

Type of House	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In No's	In percentage	In No's	In percentage	Total No's	Total Percentage
Kutcha House	7	3.93	11	6.17	18	10.11
Semi Pucca House	73	41.01	74	41.57	147	82.58
Pucca House	1	0.56	12	6.74	13	7.30
Total	**81**	**45.50**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.7 Percentage Distribution of Housing Condition of Farmers by Housing Status



Source: Field Survey

Table 5.11 describes type of house owned by the Farmers. It is clear that majority of the Farmers having semi pucca house nearly 82.58 per cent out of which Organic constitutes 41.01 per cent and Inorganic by 41.57 per cent. To the next kutcha house constitutes 10.11 per cent. Where 6.17 per cent are from Inorganic and 3.93 per cent from Organic similarly in case of pucca house constitutes around 7.30 per cent where majority of Farmers belonging from Inorganic. The overall table states that on and average Farmers are very few belonging to kutcha and pucca house, indicating Organic Farmers have advantage more than the Inorganic Farmers in order to raise their level of income.

Fig-5.7 shows type of house in terms of percentage. Almost 82.58 per cent of Farmers own semi pucca house, followed by kutcha house and to the least pucca house indicating that most of the Farmers income generated out of Farming sufficiently meting their livelihoods.

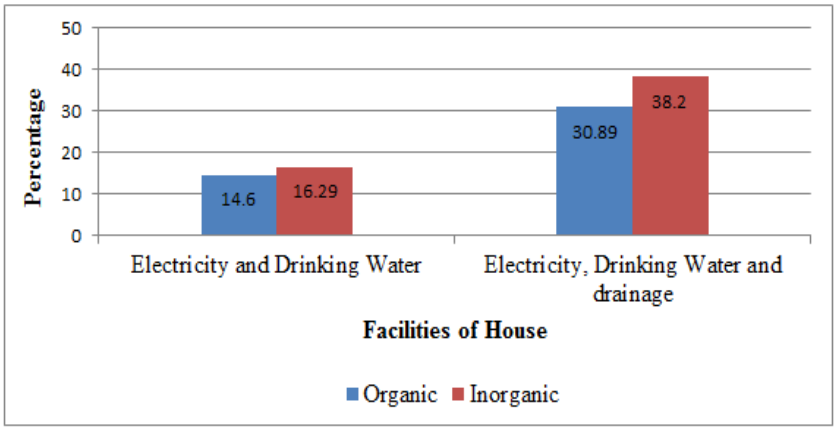
Table-5.12 Distribution of Sample Farmers by Facilities of House in the study area

Facilities of House	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In No's	In percentage	In No's	In percentage	Total No's	Total Percentage
Electricity and Drinking Water	26	14.60	29	16.29	55	30.90
Electricity, Drinking Water and drainage	55	30.89	68	38.20	123	69.10
Total	**81**	**45.50**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Table-5.12 Analyses the facilities availed by the Farmers. Majority of the Farmers have the facility of electricity, drinking water and drainage by 69.10 per cent out of which 38.20 per cent have all three facilities belong from the Inorganic and 30.89 per cent from Organic. This shows that many of the Farmers belonging to the Organic growers are not exposed unlike the Inorganic Farmers.

Fig-5.8 Percentage Distribution of Electricity and Drinking Water in the study area



Source: Field Survey

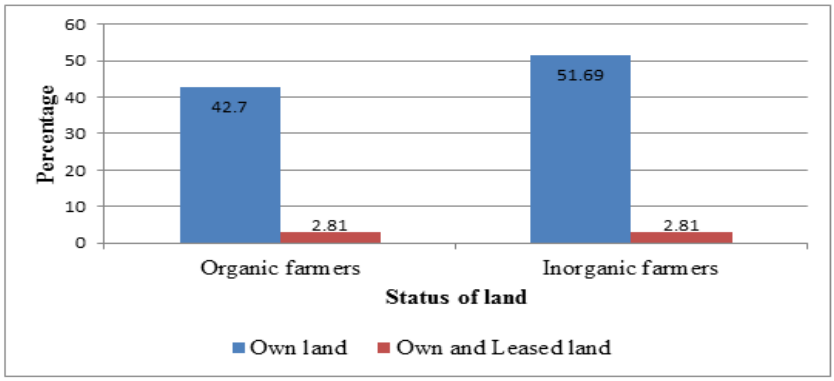
Fig.5.8 indicates percentage of Farmers owning different type of facilities. Almost 38.20 per cent of Inorganic Farmers are having electricity, drinking water and drainage facilities whereas there are houses exempted from proper drainage facilities that constitute around 16.29 per cent and 30.89 per cent of Organic Farmers are having Electricity, Drinking water and drainage facilities and only 14.60 per cent of Farmers are hold Electricity and drinking water facility.

Table-5.13 Distribution of Sample Farmers according to Land Ownership

Status of land	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Own land	76	42.70	92	51.69	168	94.4
Own and Leased land	5	2.81	5	2.81	10	5.6
Total	**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.9 Percentage Distribution of Sample Farmers by land ownership



Source: Field Survey

Table-5.13 explains the distributions of land ownership by Organic and Inorganic Farmers. Under Organic Farming 42.20 per cent of farmers own land where as 51.69 percentage owning of own land under Inorganic Farming. However, when it comes to leased land both constitutes 2.81 per cent. The aggregate own land from both Organic and Inorganic constitutes 94.4 per cent. This shows that many Farmers has own land where comparatively higher under Inorganic Farming.

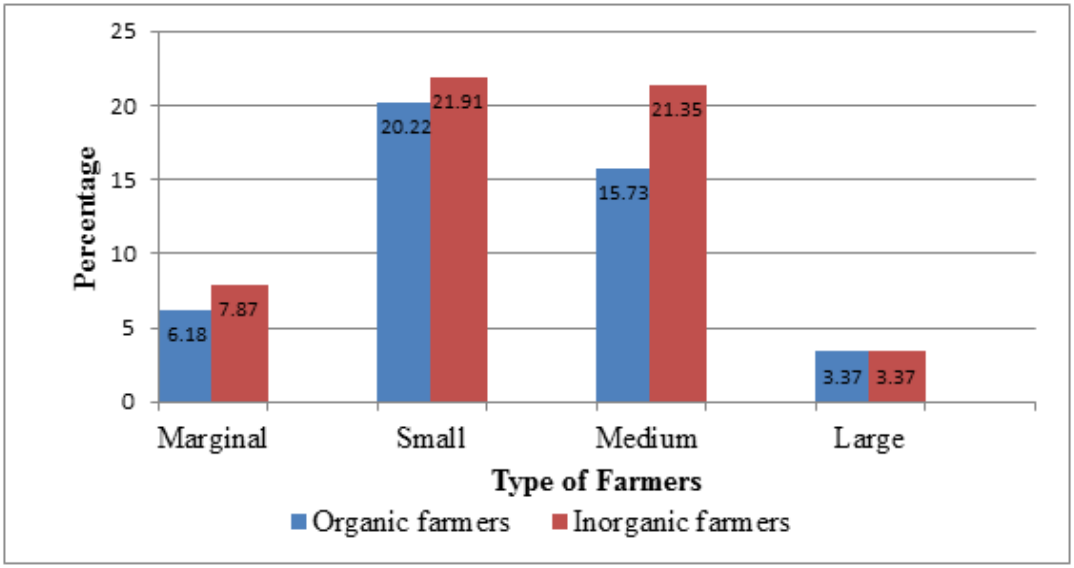
Fig 5.9 depicts percentage wise distribution of sample Farmers by land ownership under the Organic Farmers highest percentage of Farmers having own land and least in the leased land. Similarly, in case of Inorganic Farmers highest percentage of Farmers are have own land and least Farmers have leased land. With this it is clear although owned land is lower in Organic Farming still many of the Farmers are on par with the Inorganic Farmers in terms of land ownership.

Table-5.14 Distribution of Sample Farmers by type of Farmers

Type of Farmers	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Marginal (below 2.5Acre)	11	6.18	14	7.87	25	14.04
Small (2.5 to 4 acre)	36	20.22	39	21.91	75	42.13
Medium (4 To10 acre)	28	15.73	38	21.35	66	37.08
Large (Above 10 Acre)	6	3.37	6	3.37	12	6.74
Total	**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.10 Percentage Distribution of type of Farmers



The table-5.14 states type of farmers engaged in Organic and Inorganic. The farmers under the large category above 10 Acres both Organic and Inorganic are same with 3.37 per cent. In case of medium Farmers land owning between 4 to 10 Acres constitutes 15.73 per cent under Organic and 21.35 per cent under Inorganic Farming. Next Farmers belong to 2.5 to 4 Acre; almost 20.22 per cent are from Organic and 21.91 per cent from Inorganic. Similarly, in case of marginal 6.18 per cent under organic and 7.87 per cent under inorganic farming is there.

Fig-5.10 shows that to note in all the type of Farmers, highest is from Inorganic except the Farmers belong to large acres of land where both Organic and Inorganic are same. This shows that Farmers belong to this category are interested in growing the Organic crops.

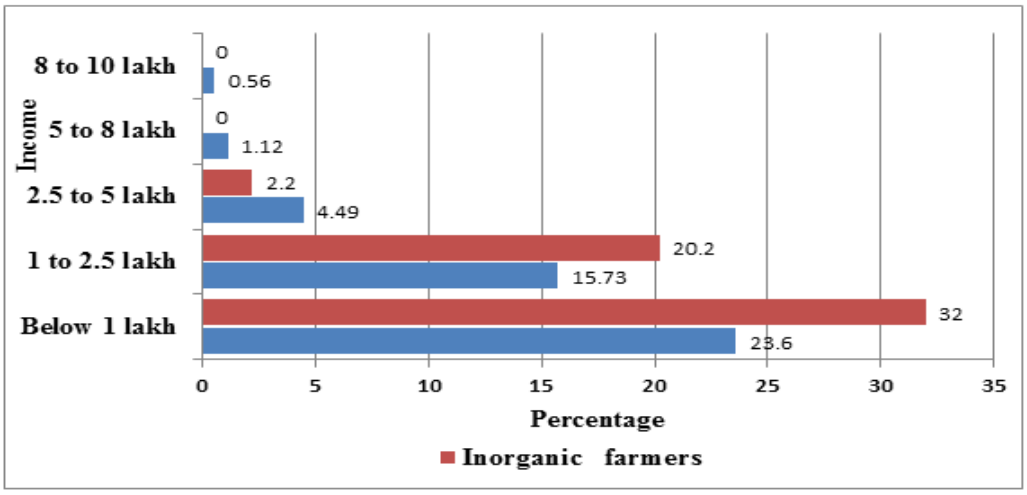
Table-5.15 Distribution of Sample Farmers according to Income of the household

Income of Household	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In Numbers	In Percentage	In Numbers	In Percentage	Total Numbers	Total Percentage
Below 1 lakh	42	23.60	57	32.0	99	55.6
1 to 2.5 lakh	28	15.73	36	20.2	64	36.0
2.5 to 5 lakhs	8	4.49	4	2.2	12	6.7
5 to 8 lakhs	2	1.12	0	0.0	2	1.1
8 to 10 lakhs	1	0.56	0	0.0	1	0.6
Total	**81**	**45.51**	**97**	**54.5**	**178**	**100**

Source: Field Survey

Table-5.15 Explain the farmers income between Organic and Inorganic growers. As the income of the farmer's increases from below 1 lakh to 8 to 10 lakhs, the percentage of Farmers income falling under the Organic Farming increases than compared to the Inorganic Farming. The Farmers whose income generated up to 8 to 10 lakhs constitute almost 0.56 per cent under the Organic Farming and negligible in the Inorganic Farming. Although the percentage of Inorganic Farmers are high still there is no much high income generated from this category.

Fig-5.11 Distribution of Sample Farmers according to Income



Source: Field Survey

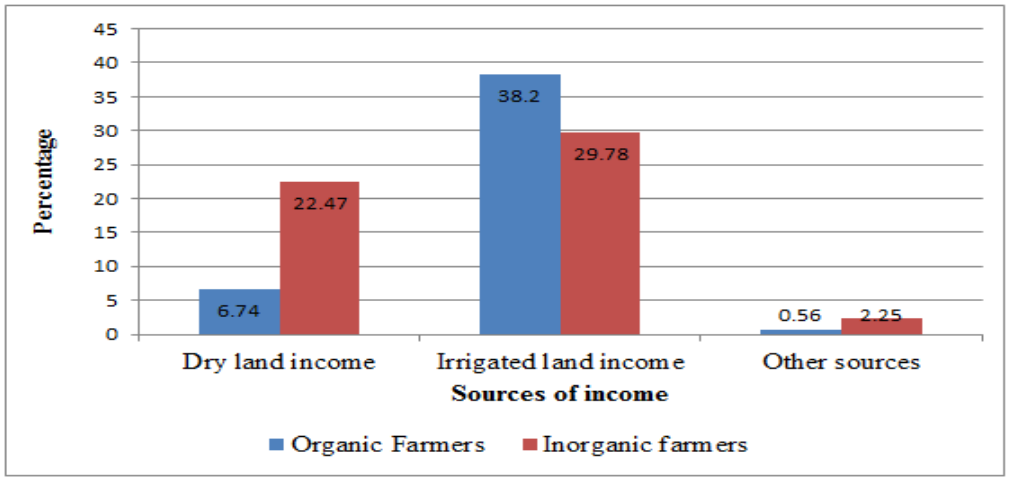
Fig 5.11 shows that Organic Farmers have the potential to earn high return as the demand for such goods are higher and even consumers ready to pay higher prices for such items. Thus, the Organic growers have large benefits from this agriculture practice.

Table 5.16 Distribution of Sample Farmers according to Major sources of Income of the household

Major Income sources of households	Type of Farmers				Organic and Inorganic Farmers	
	Organic Farmers		Inorganic Farmers			
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Dry land income	12	6.74	40	22.47	52	29.21
Irrigated land income	68	38.20	53	29.78	121	67.98
Other sources	1	0.56	4	2.25	5	2.81
Total	**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.12 Distribution of Farmers Major sources of income



Source: Field Survey

Table-5.16 Indicates major sources of income of the house hold. The most important sources of income for the household comes from the irrigated land with 67.98 per cent where highest is from Organic Farming by 38.20 per cent and Inorganic 29.78 per cent. Similarly, in terms of income generated from dry land constitute around 29.21 per cent being Inorganic 22.47 per cent higher than the Organic Farmers. Lastly other majorly sources include dairy Farming, vermicomposting constituting total 2.81 per cent out of which highest is from Inorganic Farming under this category of other sources it shows that Farmers are not sufficiently dependent on agriculture either by Organic or Inorganic but heavily dependent on other allied activities as the source of the livelihood.

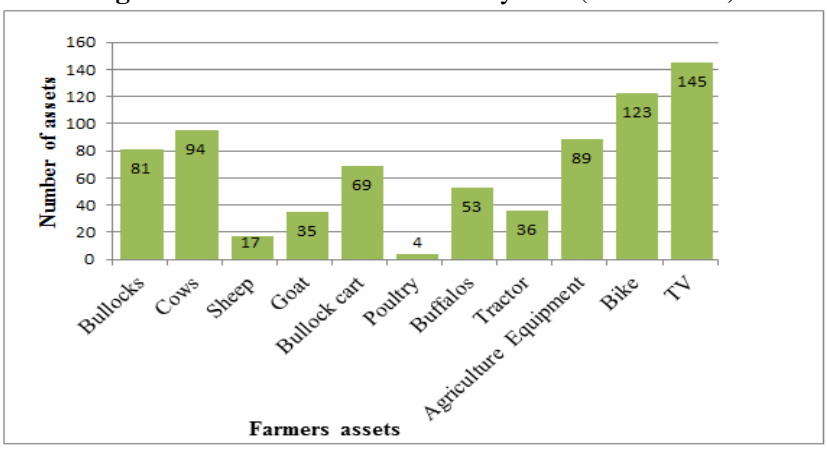
Fig-5.12 shows in respect to the percentage of major source of income of the households. No doubt the highest is from irrigated land followed by dry land and lastly by other sources like dairy Farming and vermicomposting. To note under irrigated land income highest is from Organic Farming than dry land and other sources of income. This shows that many lands are covered under irrigation in the Organic Farming.

Table-5.17 Distribution of Taluka wise Animals and other assets in the study Area

Talukas and Villages	Households	Bullocks	Cows	Sheep	Goat	Bullock cart	Poultry	Buffalos	Tractor	Agriculture Equipment	Bike	TV
Gadag Shagoti	40	16	24	0	02	14	0	13	09	21	31	37
Nargund Kallapur	29	10	20	1	4	9	0	0	13	15	21	27
Shirahatti Sugnalli	51	20	22	6	3	18	1	13	3	18	32	37
Mundargi Kelur	29	15	13	0	1	15	0	5	3	20	21	24
Ron B.S.Beleri	29	20	15	10	25	13	3	22	8	15	18	20
Total	**178**	**81**	**94**	**17**	**35**	**69**	**04**	**53**	**36**	**89**	**123**	**145**
Percentage	**100**	**45.50**	**52.80**	**9.55**	**19.66**	**38.76**	**2.24**	**29.77**	**20.22**	**50**	**69.10**	**81.46**

Source: Field Survey

Fig-5.13 Farmers assets in the study area (In Numbers)



Source: Field Survey

Table-5.17 Explains the household distribution of assets. Out of the total households 45.50 per cent of Farmers have Bullocks, followed by cows 52.80 per cent, sheep by 9.55 per cent, Goats by 19.66 per cent and poultry Farming by 2.24 per cent. Other assets like Agriculture equipment by 50 per cent, followed by Bike 69.10 per cent, TV almost by 81.46 per cent. Thus, to measure the socio-economic conditions in the agriculture sector the assets are considered an important indication or status. In this table on and average more than 50 per cent of Farmers own different assets.

Fig 5.13 shows the no of animals and other asset in the study area, out of the total households most of the Farmers are having TV, Bike, Agriculture equipment's, and Bullock cart of other assets than followed by animals' assets like cows, Bullocks, and Buffalos are there in many Farmers houses.

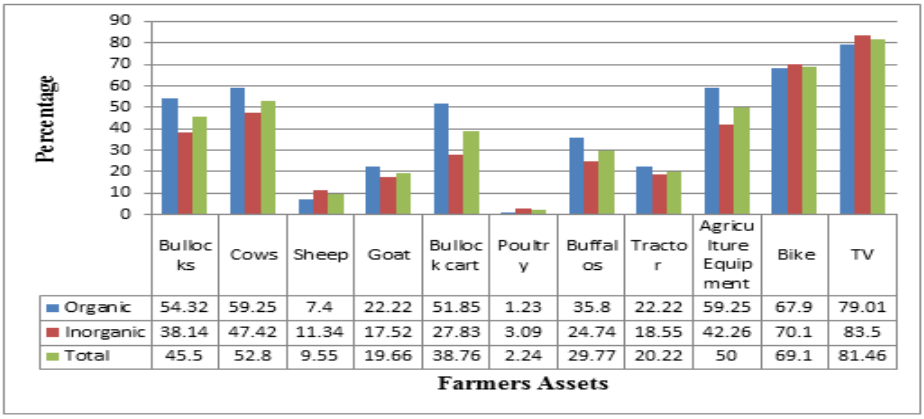
Table-5.18 Distribution of Animals and other assets by Farming method in the study Area

Taluks and Villages	Farming method	Bullocks	Cows	Sheep	Goat	Bullock cart	Poultry	Buffalos	Tractor	Agriculture Equipment's	Bike	TV
Gadag	Organic	8	13	0	2	12	0	7	5	14	16	18
Shagoti	Inorganic	8	11	0	0	2	0	6	4	7	15	19
Nargund	Organic	7	11	1	2	6	0	0	6	9	12	14
Kalapur	Inorganic	3	9	0	2	3	0	0	7	6	9	13
Shirahatti	Organic	8	8	1	0	7	0	7	1	5	10	10
Sugnalli	Inorganic	12	14	5	3	11	1	6	2	13	23	27
Mundargi	Organic	12	9	0	1	12	0	5	2	13	10	13
Kelur	Inorganic	3	4	0	0	3	0	0	1	7	11	11
Ron	Organic	9	7	4	13	5	1	10	4	7	8	9
B.S.Beleri	Inorganic	11	8	6	12	8	2	12	4	8	10	11
Total Organic		44 (54.32)	48 (59.25)	6 (7.40)	18 (22.22)	42 (51.85)	01 (1.23)	29 (35.80)	18 (22.22)	48 (59.25)	55 (67.90)	64 (79.01)
Total Inorganic		37 (38.14)	46 (47.42)	11 (11.34)	17 (17.52)	27 (27.83)	03 (3.09)	24 (24.74)	18 (18.55)	41 (42.26)	68 (70.10)	81 (83.50)
Grand Total		81 (45.50)	94 (52.80)	17 (9.55)	35 (19.66)	69 (38.76)	04 (2.24)	53 (29.77)	36 (20.22)	89 (50)	123 (69.10)	145 (81.46)

Source: Field Survey

Table-5.18 explains animals and other assets by Farming method. In the study area most of the Farmers are have dairy Farming and it is important source of supplementary income to the Farmers. Many Farmers of the Organic Farming have more no of Bullocks, Cows, Goats, Buffalos and Agriculture equipment's compared to Inorganic Farmers. Those who have held bullocks and cows they are interested in the Organic Farming. In the study area account of Inorganic Farmers had a greater number of Sheep, poultry, Bike and T.V. assets compared to Organic Farmers. The tractor asset can be seen in same ratio between both the Farmers.

Fig-5.14 View on Different assets by Farming method in the study area



	Bullocks	Cows	Sheep	Goat	Bullock cart	Poultry	Buffalos	Tractor	Agriculture Equipment	Bike	TV
Organic	54.32	59.25	7.4	22.22	51.85	1.23	35.8	22.22	59.25	67.9	79.01
Inorganic	38.14	47.42	11.34	17.52	27.83	3.09	24.74	18.55	42.26	70.1	83.5
Total	45.5	52.8	9.55	19.66	38.76	2.24	29.77	20.22	50	69.1	81.46

Source: Field Survey

Fig-5.14 furnished percentage distribution of assets by Farming method. The Livestock's namely Bullocks, Cows, Sheep, Goat, Poultry and Buffaloes are covered in the study. The study also covered other assets, like Bullocks cart, Tractor, Agriculture equipment, Bike and T.V. Livestock plays an important role in the Farming. It contributes livelihoods to two- third of rural population and also it provides employment opportunity.

Above figure shows comparative percentage of animal and other assets of Organic and Inorganic Farming. 54.32 per cent of Organic Farmers have bullocks, followed by 59.25 per cent of Cows, 22.22 per cent of Goat, 51.85 per cent of Bullock cart, 35.8 per cent of Buffalos, 22.22 per cent of Tractor and 59.25 per cent of Agricultural Equipment Assets can be seen in the Organic Farming Method. This is highest to Inorganic Farming method comparatively.

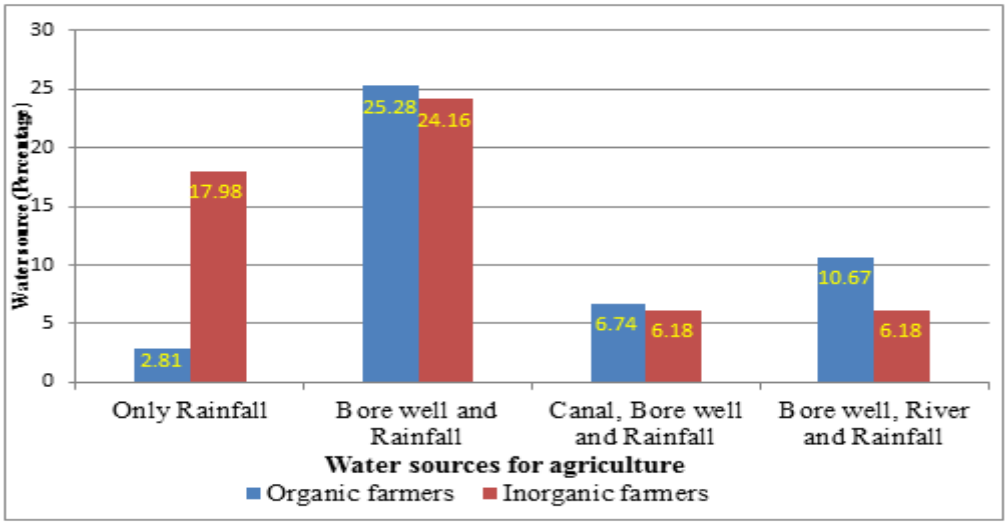
Followed by the 11.34 per cent of Sheep, 3.09 per cent of poultry, 70.1 per cent of bike and 83.5 per cent of T.V assets are more in the Inorganic Farming method. Most of the Farmers from Organic Farming method are holding highest no of assets in the study area.

Table-5.19 Distribution of water sources for agriculture according to Farming method

Water Sources For Agriculture	Farming method				Organic and Inorganic Farming	
	Organic Farming		Inorganic Farming			
	In No's	In Percentage	In No's	In Percentage	Total No's	Total Percentage
Only Rainfall	5	2.81	32	17.98	37	20.79
Bore well and Rainfall	45	25.28	43	24.16	88	49.44
Canal, Bore well and Rainfall	12	6.74	11	6.18	23	12.92
Bore well, River and Rainfall	19	10.67	11	6.18	30	16.85
Total	**81**	**45.51**	**97**	**54.49**	**178**	**100**

Source: Field Survey

Fig-5.15 Distribution of water sources for agriculture



Source: Field Survey

Table-5.19 defines water source for agriculture by Farming method. In terms of Farmers who are dependent only by rain constitute 20.79 per cent out of which 2.81 per cent are dependent from Organic Farmers and 17.98 per cent are dependent on Inorganic. This clearly understands that many Inorganic Farmers are falling in the category of dry land. To the next majority of Farmers are dependent on Bore well and rainfall constituting by 49.44 per cent where highest from Organic with 25.28 per cent and 24.16 per cent from Inorganic followed by canal, rivers are majorly dependent by Organic Farmers than Inorganic Farmers.

Fig 5.15 shows water sources of agriculture where the percentage of many Farmers dependent on bore well and rain fall (Highest from Organic) followed by rainfall (Less from Organic) to the next canal (Highest from Organic) and lastly River, Bore well and rainfall (Highest from Organic).

Part-II

Cropping Method, Production, Yield, Market prices and Returns of Organic and Inorganic Farming

Cropping method is an important component of farming system. Inputs are playing a very important role in getting yield and returns by farming method. Below tables are analysis yields, market prices and cost of cultivation by farming method.

Table-5.20 Distribution of Average and Total Farm Size by Taluks in the Study Area

Name of the Taluks	Organic Farming		Inorganic Farming		Organic and Inorganic Farming	
	Total Area in acres	Average Area in acres	Total Area In acres	Average Area in acres	Total Area In acres	Average Area in acres
Gadag	125.54	6.27	155.55	7.77	281.09	7.02
Naragund	85.7	6.12	104.5	6.96	190.2	6.55
Shirahatti	62.61	4.17	158.1	4.39	220.71	4.32
Mundaragi	70.17	4.12	60	5	130.17	4.48
Ron	82.22	5.48	46	3.28	128.22	4.42
Overall	**426.24**	**5.26**	**524.15**	**5.40**	**950.3**	**5.33**

Source: Field Survey

Table-5.20 shows Distribution of Average and total farm size by taluks of Gadag district. Average area in acres was 7.77 per cent from Inorganic Farming and 6.27 per cent from Organic Farming 7.02 per cent total farm size. 3.28 per cent average area in acres Inorganic Farming in Ron taluk and 5.48 per cent average area in acres in Organic Farming. 6.12 per cent average area in acres Organic Farming in Naragund taluk and 6.96 per cent average area in acres Inorganic Farming.4.12 per cent average area in acres Organic Farming in Mundaragi taluk and 5 per cent Inorganic Farming average area in acres.4.17 per cent average area in acres Organic Farming in Shirahatti taluk and 4.39 per cent average area in acres Organic Farming. Overall, 5.33 per cent of Organic and Inorganic Farming average area in acres.

Table-5.21 Cropping Pattern, Production, Average Yield and Average Prices of Cereals of Organic Farming and Inorganic Farming

Particulars	Crops						Total	
	Maize		Wheat		Jowar			
	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming
Area (In acre)	202.8	235.5	46.3	49.5	66.5	80	315.6	365
Production (In Quintal)	3248	2928	228	185	314	305	3790	3418
Average Yield (In Quintal)	16.01	12.43	4.92	3.73	4.72	3.81	25.65	19.97
Average price (In Rs)	1411	1364	2298	2126	2042	2102	5751	5592

Source: Field Survey

Table-5.21 shows Cropping Pattern, Production, Yield and Prices of Cereals of Organic Farming and Inorganic Farming where, average yield under the selected crops highest was 16.01 of maize crop by Organic Farming, 12.43 yields by Inorganic Farming. Wheat Crop yield from Organic Farming is 4.92 and 3.73 average yield from Inorganic Farming. Jowar Crop 4.72 yield by Organic Farming and 3.81 from Inorganic Farming. And it is quite natural as well in terms of prices; no doubt all crops from Organic Farming are priced higher than Inorganic due to its benefits.

Table-5.22 Cropping Pattern, Production, Average yield and Average Price of Oilseed and Pulses of Organic Farming and Inorganic Farming.

Particulars	Crops						Total	
	Groundnut		Green gram		Bengal Gram			
	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming
Area (In acre)	113	110	49.5	80.7	32	36	194.5	226.7
Production (In Quintal)	599	555	179	239	119	131	897	925
Average Yield (In Quintal)	5.30	5.04	3.61	2.96	3.71	3.63	12.62	11.63
Average price (In Rs)	4962	4960	5269	5327	4271	4524	14502	14811

Note: Above Shown Yield and Prices are in Average
Source: Field Survey

Table-5.22 shows Cropping Pattern, Production and Price of Oilseed and Pulses of Organic Farming and Inorganic Farming where, average yield was 5.30 Groundnut Crop Organic

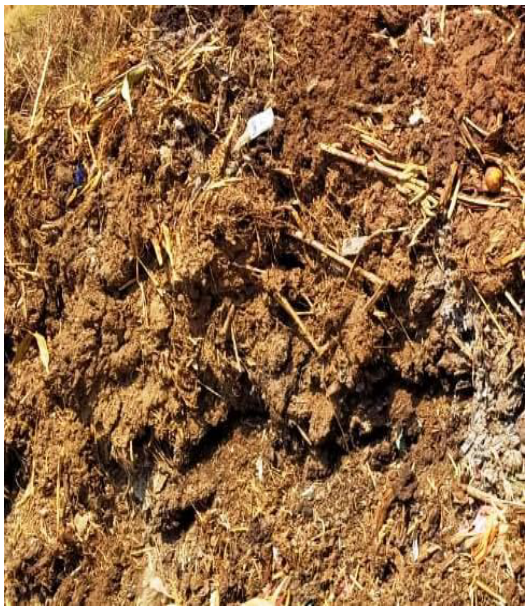
Farming, 5.04 Inorganic Farming. Green gramCrop average yield is 3.61 from Organic Farming and 2.96 Inorganic Farming. Bengal Gram Crop average yield is 3.71 from Organic Farming and 3.63 average yields from Inorganic Farming. Oilseed crop average price is almost same by both the Farming method. Green gram and Bengal gram Pulses prices are high in Inorganic Farming compared to Organic Farming. Inorganically produced pulses are getting higher average prices.

Table-5.23 Average time of application, quantity of fertilizer per acre and price of per Bag/Litter/Tractor of Organic fertilizers

Sl. No.	Name of the crops	Time of application	Quantity for per acre	Average Price (In Rs)
Type of manure	**Green Manure (Quantity Shown in bag)**			
1	Maize	1	2	**Usage of Own Produced**
2	Wheat	1	2	
3	Jowar	1	2	
4	Groundnut	1	4	
5	Green gram	1	2	
6	Bengal gram	1	1	
Type of manure	**Vermi compost (Quantity Shown in bag)**			
1	Maize	2	2	**419**
2	Wheat	2	1	
3	Jowar	2	1	
4	Groundnut	2	2	
5	Green gram	2	2	
6	Bengal gram	2	2	
Type of manure	**Bio- Pesticides (Quantity Shown in Litter)**			
1	Maize	2	4	**236**
2	Wheat	1	1	
3	Jowar	1	1	
4	Groundnut	1	3	
5	Green gram	1	3	
6	Bengal gram	1	2	
Type of manure	**Livestock Manure (Quantity Shown In Tractor)**			
1	Maize	1	1	**2945**
2	Wheat	1	1	
3	Jowar	1	1	
4	Groundnut	1	1	
5	Green gram	1	1	
6	Bengal gram	1	1	

Source: Field Survey

Photos of Organic Fertilizers

Green Manure	**Vermi Compost**
	
Bio Pesticides	**Livestock Manure**
	

Source: Field Visit

In the Organic Farming method most of the Farmers were using naturally available resources as fertilizers. Like Green Waste (Leafs, etc.), Food waste, Cow dung and poultry manure. Most of the Farmers were preparing Green Manure, Vermi-Compost, and bio Pesticides in their field. Those who were Having Animals they got livestock manure. And some of the Organic Farmers were purchasing Organic fertilizers in local area. With the addition of Fertilizers crop yields and agricultural productivity would be significantly increases.

Organic Farming is cost benefit Farming method because of most of the raw material for the preparation of fertilizer was available in their agriculture land only. So easily they were preparing and Appling in their fields and producing more quality and quantity crops. With the use of Organic fertilizers increases the soil fertility.

Table 5.23 explains the Average time of application, quantity of fertilizer per acre and price of per bag/Litter/Tractor of Organic fertilizers. Under the application of green manure, the quantity that requires per acre is 2 bags for wheat, Maize, Jowar, green gram and 4 bags for groundnut followed by 1 bag for Bengal gram. Similarly, the vermi compost fertilizer 2 bags for Maize, Groundnut, Green gram, Bengal gram and 1 bag for Wheat and Jowar crops. Likewise, Bio-pesticides measured in litters which are using 3 litters for Groundnut, Green gram. For Maize and Bengal gram respectively 4 litter and 2 litter per acre is using. As well as for Wheat and Jowar 1 litter each per acre is used. Finally, livestock manure for the all the selected crops 1 tractor per acre has been used. Fertilizer time of application to all the selected crops average time of application is 1 time. Only vermi compost fertilizer is applying 2 times in each crop production.

Green Manure (Quantity Shown in bag) for crops such as Maize, Wheat, Jowar, Groundnut Green gram and Bengal gram average price is Zero because Farmers are using own produced Green manure which is available in their land only. Followed by another fertilizer of Vermi Composting Fertilizer (Quantity Shown in bag) average price per bag is Rs.419. Next Bio-Pesticide (Quantity Shown in Litter) average price is Rs.236. Livestock Manure (Quantity Shown in Tractor) average price is Rs.2945.

Table-5.24 Average time of application, quantity of fertilizer per acre and price of per bag of Inorganic fertilizers

Sl. No.	Name of the crops	Time of application	Quantity For Per acre	Average Price (In Rs)
Type of Fertilizer	**Urea (Quantity Shown in bag)**			
1	Maize	**1**	**2**	**356**
2	Wheat	**1**	**1**	
3	Jowar	**1**	**1**	
4	Groundnut	**1**	**2**	
5	Green gram	**1**	**1**	
6	Bengal gram	**1**	**2**	
Type of Fertilizer	**DAP (Quantity Shown in bag)**			
1	Maize	**1**	**2**	**1368**
2	Wheat	**1**	**1**	
3	Jowar	**1**	**1**	
4	Groundnut	**1**	**2**	
5	Green gram	**1**	**2**	
6	Bengal gram	**1**	**2**	
Type of Fertilizer	**Potassium (Quantity Shown in bag)**			
1	Maize	**1**	**1**	**1102**
2	Wheat	**1**	**1**	

3	Jowar	**1**	**1**	
4	Groundnut	**1**	**1**	
5	Green gram	**1**	**1**	
6	Bengal gram	**1**	**1**	
Type of Fertilizer	**Complex (Quantity Shown in bag)**			
1	Maize	**1**	**1**	**971**
2	Wheat	**1**	**1**	
3	Jowar	**1**	**1**	
4	Groundnut	**1**	**1**	
5	Green gram	**1**	**1**	
6	Bengal gram	**1**	**1**	

Source: Field Survey

Photos of Inorganic Fertilizers

Urea	**DAP**
	
Potassium	**Complex**
	

Source: Website

Normally in the Inorganic Framing above shown fertilizers are used. Liquid fertilizer also uses for Crop Production. In recent days many varieties of fertilizers are available in the market.

Table 5.24 explains theAverage time of application of fertilizers, quantity of fertilizer per acre and price of per bag of Inorganic fertilizers. Under the use of Urea as an application of fertilizer under this 1 bag for wheat, jowar, green gram applied 1 time, and 2 times for maize, Groundnut and Bengal gram. To the next DAP 2 bags used under the crops like Maize, Groundnut, green gram and Bengal gram whereas 1 bag for wheat, and jowar crops. Likewise, potassium and complex fertilizers are using 1 bag for per acre to all the selected crops. And Average time of application of fertilizer to all the crops is 1 time each crop production season.

Urea type of fertilizer for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram average price is Rs.356. DAP type of fertilizer average price Rs.1368. Next the Potassium type of fertilizer Rs.1102 average price and Complex type of fertilizer Rs.971 average prices.

Table-5.25 Reasons for shifting from Inorganic to Organic Farming

Sl. No.	Reasons	Response from Farmers				Total
		Yes		No		
		Count	Percentage	Count	Percentage	
1	Increasing cost of Inorganic fertilizers	79	97.53	2	2.47	81
2	High productivity from Organic cultivation	79	97.53	2	2.47	81
3	Quality of Organic products	81	100	00	0	81
4	Health concerns	81	100	0	0	81
5	Soil health sustainability	81	100	0	0	81
6	Environment concern	81	100	0	0	81
7	Motivation by neighbouring Organic Farmers	80	98.77	1	1.23	81
8	Organic Farming is more profitable than Inorganic Farming	81	100	0	0	81
9	Motivation by media	77	95.06	4	4.94	81
10	Motivation by Govt/NGO schemes	80	98.77	1	1.23	81
11	Organic products prices are high compared to Inorganic products	65	80.25	16	19.75	81

Source: Field Survey

Agriculture sector works with nature and many Farmers are interested in traditional Farming because of it is old method and nature friendly. This Farming has lower cost of cultivation. In recent days for organically produced products are getting more demand that is why only Inorganic Farmers are moving towards Organic Farming.

Table 5.25 defines the reasons for the shift from Inorganic to Organic Farming. However, the some of the reasons are affected cent per cent for to the shift to Organic Farming. Change from Inorganic to Organic Farming like Quality under Organic Products, Health concerns, Soil health Sustainability, Environment concerns, and more profitability. The other reasons include cost of fertilizers, Lower productivity in Inorganic Farming are the reasons to shift to Organic Farming. And also, reasons like high prices for Organic products and motivation by Government/ NGO/Neighbouring Farmers also reasons of shifting of Inorganic to Organic Farming.

Table-5.26 Distribution of sample Farmers experience in Organic Farming (In years)

Sl. No.	Talukas	Average Years						Total
		Less than 1Year	2 to 5 years	6 to 10 years	11 to15 years	16 to 20 years	Above 21 years	
1	Gadag	0	3	10	1	4	2	20

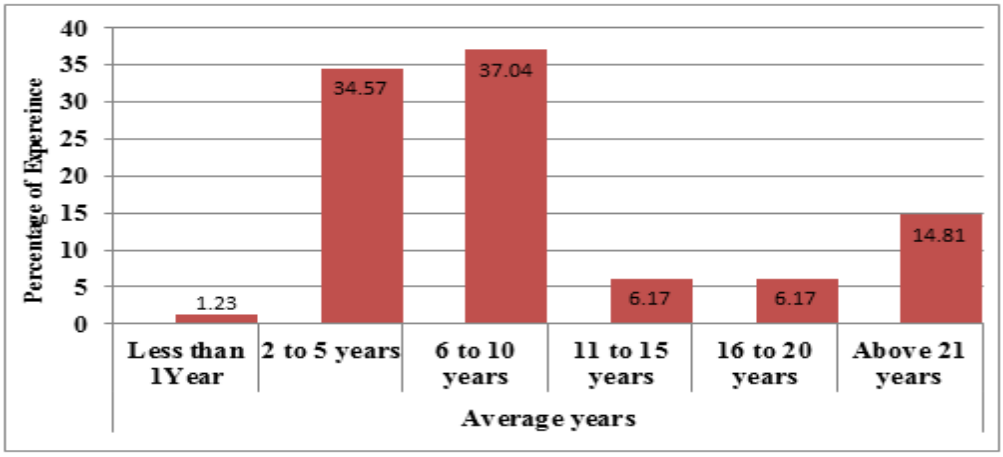
2	Nargund	1	7	5	0	0	1	14
3	Shirahatti	0	6	5	3	1	0	15
4	Mundargi	0	2	7	1	0	7	17
5	Ron	0	10	3	0	0	2	15
Total		**1**	**28**	**30**	**5**	**5**	**12**	**81**
Percentage		1.23	34.57	37.04	6.17	6.17	14.81	100

Source: Field Survey

Organic Farming has systematic process that requires some procedures like vermi composting, utilization of agriculture wastage and livestock manure. For the use of bio-pesticides there is a requirement of experience in Organic Farming.

Table 5.26 shows Organic Farming experience of Farmers by years. In the study area in-between 6 to 10 years experienced 30 Farmers are there, this is highest group of experience in the study area. Next 2 to 5 years experienced 28 Farmers are working, followed by 21 Farmers are having 12 years' experience. And 11 to 15 years and 16 to 20 years experienced only 5 farmers are involving in Organic Farming. Next only 1 farmer is hold less than 1-year experience in the field.

Fig 5.16 Farmers Experience in the field of Organic Farming in the study area



Source: Field Survey

Fig-5.16 highlights average year of experience in Organic Farming. Most of the Farmers (37.04 per cent) having experience between 6 to 10 years, followed by 2 to 5 years (34.57 per cent), next above 21 years (14.81 per cent) and also in between 11 to 15 years and 16 to 20 years of experience Farmers are (6.17 per cent), and to the least less than one year (1.23 per cent). The number of experiences also affects the Organic Farming as they would know many things like cost reduction technique, income in productivity, yield etc. Thus, the experience counts the overall profit maximization in the Organic Farming.

Table-5.27 Details of Organic farmer's Membership in the organization

Sl. No.	Taluk	Name of the Organization	No of Farmers membership in the organization	
			Count	Percentage
1	Gadag	Sahaja Savyav Krishikar Balaga	20	24.69
2	Nargund	Basaveshwar Savyav Krishikar Sangha	14	17.28
3	Shirahatti	Shri Bhomitayi Savayav Raitar Sangh	15	18.52

4	Mundargi	Siri Samrudhi Savyav Krishikar Samithi	17	20.99
5	Ron	Sukmuneshwar Savayav Krishikar Sangha	15	18.52
Total			**81**	**100**

Source: Field Survey

Table-5.27 identifies the number of farmer's membership in different organization at different talukas. The highest taluka where the Organic Farmers became membership comes from Gadag taluka under the Sahaja savyav krishikar balaga by 24.69 per cent followed by Mundargi taluka under the organization of Siri Samrudhi Savyav Krishikar Samithi by 20.99 per cent, and next both the Shirahatti taluka Shri Bhomitayi Savayav Raitar Sangha and Ron taluka Sukmuneshwar Savayav Krishikar Sangha has 18.52 per cent of membership in organization and to the least from Nargund taluka under the organization of Basaveshwar Savyav Krishikar Sangha 17.28 per cent. These organizations are important for the Organic Farmers as these helps the Farmers in different field like preparation of manure, cost of cultivation reduction, techniques in improving productivity, and to get good prices and market for different Organic crops and also assisting to Farmers if any financial need. These organizations are getting training and information by Agriculture department and Some NGO's.

Table 5.28 informs the training organization under different talukas. For any agriculture activities especially under Organic requires prior knowledge for the proper discharge of the Organic Farming. Thus, the need of training becomes essential because it helps Farmers to train in the particular field and to overcome basic problems from the Organic growth. Gadag is the highest taluka where trained Farmers in terms of Organic Farmers are more followed by Mundaragi with 20.99 per cent and to the least Nargund with 17.28 per cent under various NGO's like BAIF, SARDS, Kisan Bharati trust, etc.

Table-5.28 Information of Organic Farmers Training

Sl. No.	Talukas	No of Organic Farmers	No of trained Farmers	Percentage	Name of the training organisation (NGO)
1	Gadag	20	20	24.69	BAIF Rural Development Institution
2	Naragund	14	14	17.28	Social Awareness and Rural Development Society (SARDS)
3	Shirahatti	15	15	18.52	Kisan Bharathi Trust-NGO
4	Mundargi	17	17	20.99	BAIF Rural Development Institution
5	Ron	15	15	18.52	Shri Shri Organic NGO
Total		**81**	**81**	**100**	

Source: Field Survey

Table-5.29 Financial and non-financial assistance for Organic Farming

Sl. No.	Taluk	Response from Farmers									
		Financial Assistance					Non-Financial assistance				
		Yes		No		Total no of Farmers	Yes		No		Total no of Farmers
		Count	Percentage	Count	Percentage		Count	Percentage	Count	Percentage	
1	Gadag	4	4.94	16	19.75	20	20	24.69	0	0	20

2	Nargund	2	2.47	12	14.81	14	14	17.28	0	0	14
3	Shirahatti	8	9.88	7	8.64	15	15	18.52	0	0	15
4	Mundargi	2	2.47	15	18.52	17	17	20.99	0	0	17
5	Ron	2	2.47	13	16.05	15	15	18.52	0	0	15
Total		18	22.22	63	77.78	81	81	100	0	0	81

Source: Field Survey

Table 5.29 indicates the assistance by financial and non-financial support that includes tarpline, Drum for liquid fertilizer preparation, Vermi compost preparation and Green Manure preparation ponds for the Organic Farmers. Under the financial assistance majority of Farmers not received any benefits, covering almost 77.78 per cent. However, in terms of non-financial assistance cent per cent of Farmers have received assistance in setting various requirements for the Organic Farming method. Most of the NGO's are assisted financial and non-financial to organic farmers.

Table-5.30 Information of land certification of Organic Farming

Sl. No.	Taluk	No of land certified Organic farms	Certified by the Agency						Total
			Govt	per cent	NGO	per cent	Any Other	per cent	
1	Gadag	20	0	0	20	24.69	0	0	20
2	Naragund	14	0	0	14	17.28	0	0	14
3	Shirahatti	15	0	0	15	18.52	0	0	15
4	Mundargi	17	0	0	17	20.99	0	0	17
5	Ron	15	0	0	15	18.52	0	0	15
Total		**81**	**0**	**0**	**81**	**100**	**0**	**0**	**81**

Source: Field Survey

Table 5.30 Highlights land certification for Organic Farming by agencies. In terms of number of land certified, highest comes from Gadag followed by Mundargi, next Ron and Shirahatti and to the least is Nargund taluk. In terms of certify agency, it is the many NGO'S are worked for the land certification for the Organic Farming at different talukas. In the Organic Farming method now a day's certification process is most important because it helps to identify status soil fertility and productivity of land. And another advantage of land certification is to grow a suitable crop on that land. This is one type of guide to get more production and profit in Farming.

Table-5.31 Favourable Reasons for Inorganic Farming method

Sl. No.	Reason	Response from Farmers				Total
		Yes		No		
		Count	Percentage	Count	Percentage	
1	Convenient to use	95	97.94	2	2.06	97
2	Fast production	97	100	0	0	97
3	Works immediately	97	100	0	0	97
4	Availability of fertilizers	95	97.94	2	2.06	97
5	Increase of food production	97	100	0	0	97
6	Small scale land holding	71	73.20	26	26.80	97

Source: Field Survey

Table 5.31 defines the reasons for choosing only Inorganic Farming method. The cent percentage of Farmers who said the reason for choosing Inorganic Farming due to fast production, immediate work and also it increases food production followed by other reasons like convenient to use, availability of fertilizers and small-scale land holding. Now a days many Farmers are following modern Farming method. In the modern method everything will be favourable to Farmers, like easy availability of fertilizers and Seeds in the Market and major reason is fast growing of crops with the help of latest fertilizers.

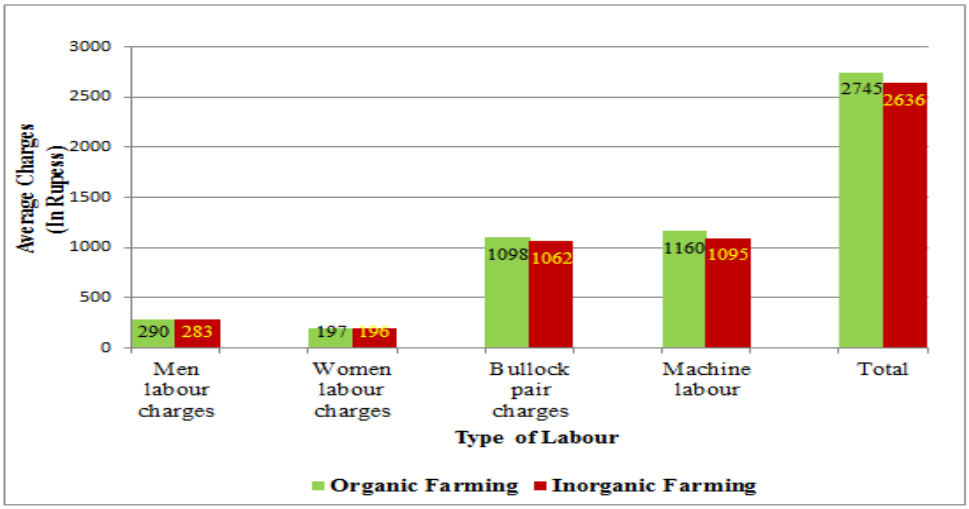
Table -5.32 Distribution of Labour charges and cost of hiring Bullocks and Machine Charges by Farming method (Charges are in Average)

Sl. No.	Particulars	Type of Farming	
		Organic	Inorganic
1	Men labour charges (Per day average charge)	290	283
2	Women labour charges (Per day average charge)	197	196
3	Bullock pair charges (Pair/Per day average charge)	1098	1062
4	Machine labour (Per day average charge)	1160	1095
Total		**2745**	**2636**

Source: Field Survey

The table 5.32 shows Distribution of Labour charges and cost of hiring Bullocks and Machine Charges by Farming method (Charges are in Average) where, Machine labour (Per day average charge) was Rs.1160 for Organic Farming, and Rs.1095 for Inorganic Farming. As well as for charges of Bullock pair (Pair/per day average charge) was Rs.1098 Organic Farming and Rs.1062 Inorganic Farming. A men labour charge (Per day average charge) was Rs.290 Organic Farming and Rs.283 for Inorganic Farming. Women labour charges (Per day average charge) were Rs.197 for Organic Farming and Rs.196 for Inorganic Farming.

Fig 5.17 Comparison View of Labour Charges and Cost of Hiring Bullocks and Machine Labour by Farming method



Source: Field Survey

Note: Above shown Average Charges are in Rs. for per day/ per pair (Bullock)

Fig 5.17 indicates that comparison Charges of Labour, Bullock pairs and machine charges of Organic and Inorganic Farming. It is clear that there is no much difference in either this is become there is no impact of using Organic or Inorganic Farming under the charges of labour, bullocks' pair and machine.

Table-5.33 Distribution of Average Family and hired labour for various activities of Organic Farming

Particulars	No. of Times	Family labour				Total	Hired labour				Total	Grand Total
		Men labour	Women labour	Bullock pair	Machine labour		Men labour	Women labour	Bullock pair	Machine labour		
Ploughing	02	02	01	01	-	04	02	02	02	01	07	11
Waste management	02	02	01	-	-	03	02	02	-	-	04	07
Organic Manure application	02	02	01	-	-	03	02	02	-	-	04	07
Spraying Bio pesticides	02	02	-	-	-	02	02	-	-	-	02	04
Irrigation work	Continuously	02	-	-	-	02	01	-	-	-	01	02
Harvesting	02	02	01	-	-	03	03	03	-	03	09	12
Transportation	02	02	-	-	-	02	02	-	-	-	02	04

Note: Quantity of labour shown in average

Source: Field survey

The table-5.33 Explains per season Distribution of Average Family and hired labour for various activities used under Organic Farming where, irrigation work continues, Ploughing, Waste management, Organic Manure application, Spraying Bio pesticides, Harvesting, Transportation 2 times by family labour, most of the times by Men Labour as compared to that of female labour. Hired Labour, both men and women were found to be high in case of harvesting activities as compared to other activities.

Table-5.34 Distribution of Average Family and hired labour for various activities of Inorganic Farming

Particulars	No. of Times	Family labour				Total	Hired labour				Total	Grand Total
		Men labour	Women labour	Bullock pair	Machine labour		Men labour	Women labour	Bullock pair	Machine labour		
Ploughing	02	02	01	01	-	04	02	02	02	02	08	12
Waste management	02	02	01	-	-	03	02	02	-	-	04	07
Fertilizer application	02	01	-	-	-	01	02	-	-	-	02	03
Spraying Pesticides	02	02	-	-	-	02	02	-	-	-	02	04
Irrigation work	Continuously	02	-	-	-	02	01	-	-	-	01	03
Harvesting	02	02	01	-	-	03	03	03	-	03	09	12
Transportation	02	02	01	-	-	02	02	-	-	-	02	04

Note: Quantity of labour shown in average

Source: Field survey

The table-5.34 Distribution of per season Average Family and hired labour for various activities of Inorganic Farming where, irrigation work continues, Ploughing, Waste management,

Fertilizer application, spraying pesticides, Harvesting, Transportation 2 times by family labour, most of the times by Men Labour as compared to that of female labour. Hired Labour, both men and women were found to be high in case of harvesting activities as compared to other activities.

The below table-5.35 shows Average total cost of per acre cultivation of cereals crops namely, Maize, Wheat and Jowar Crops of both Organic Farmingand Inorganic Farming. Costs are included Variable costs like Seeds cost, Fertilizers Cost, Labour Cost, and Irrigation Maintenance costs, and also it counted fixed cost of land revenue.

Table-5.35 Average total cost of per acre cultivation of cereals crops
(In Rupees)

Particulars	Maize		Wheat		Jowar		Total	
	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming	Organic Farming	Inorganic Farming
Average Seeds Cost	1423	1543	633	645	305	476	2361	2664
Average Fertilizers cost	4727	5521	3600	3797	3600	3797	11927	13115
Average Labour Charge	2745	2636	2745	2636	2745	2636	8235	7908
Average Irrigation Charge	1000	1000	1000	1000	1000	1000	3000	3000
Average Land Revenue	12	12	12	12	12	12	36	36
Average Total Cost	9907	10712	7990	8090	7662	7921	25559	26723

Source: Field Survey

I. Maize

In the study area most of the Farmers are producing Maize crop. This is one of the important cereals crops in the selected villages.

Production cost of maize per acre under Organic Farming average cost of seeds was found to be Rs.1423 and from Inorganic Farming seeds cost found Rs.1543 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4727 and Rs.5521 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue are same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Maize Crop Occurred by the Organic Farming is Rs.9907 and followed by Inorganic Farming Average Production Cost is Rs.10712 which is high in the study area.

II. Wheat

Wheat is the Most Important Food grain and stable crop; it provides nutrition food to human beings.

The Per acre cost of wheat production under the Organic Farming method average cost of seeds was found to be Rs.633 and from Inorganic Farming seeds cost found to be Rs.645 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.3600 and Rs.3797 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the

both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Wheat Crop Occurred by the Organic Farming is Rs.7990 and followed by Inorganic Farming Average Production Cost is Rs.8090 which is high in the study area.

III. Jowar

Jowar is the most important food and fodder crop of dry land agriculture. Primarily Jowar is used as human food in the form such as a roti or bhakri. And normally this crop is grown in all the season of the year.

Jowar production of per acre cost under Organic Farming method average cost of seeds was found to be Rs.305 and from Inorganic Farming seeds cost found to be Rs.476 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.3600 and Rs.3797 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Jowar Crop occurred by the organic Farming is Rs.7662 and followed by Inorganic Farming Average Production Cost is Rs.7921 which is high in the study area.

In the study organically produced Cereals crops cost is less compared to Inorganic Farming. Followed by Organic Farming Average Total Cost of all the three cereals crops (Maize, Wheat and Jowar) was found to be Rs.25559 and from Inorganic Farming Average Total cost was found to be Rs.26723 and between the both Farming average cost differences found Rs.1164 which is highest from Inorganic Farming method.

Table-5.36 Average total cost of per acre cultivation of Oilseeds and Pulses crops
(In Rupees)

Particulars	Groundnut		Green gram		Bengal gram		Total	
	Organic Farming	Inorganic Farming	Organic Farming	Organic Farming Total	Organic Farming Total	Inorganic Farming	Organic Farming	Inorganic Farming
Average Seeds Cost	1292	1399	634	741	683	944	2609	3084
Average Fertilizers cost	4491	5521	4491	5165	4255	5521	13237	16207
Average Labour Charge	2745	2636	2745	2636	2745	2636	8235	7908
Average Irrigation Charge	1000	1000	1000	1000	1000	1000	3000	3000
Average Land Revenue	12	12	12	12	12	12	36	36
Average Total Cost	9540	10568	8882	9554	8695	10113	27117	30235

Source: Field Survey

The table-5.36 shows Average total cost of per acre cultivation of Oilseeds and Pulses crops namely Groundnut, Green gram and Bengal Gram Crops of both Organic Farming and Inorganic Farming. Costs are included Variable costs like Seeds cost, Fertilizers Cost, Labour Cost, and Irrigation Maintenance costs, and also it counted fixed cost of land revenue.

IV. Groundnut

Groundnut is an important oilseed crop and it is used in making many items like Groundnut oil, soap and cosmetics etc. and also it is rich in protein contents and vitamins.

The Per Acre cost of Groundnut production under the Organic Farming average cost of seeds was found to be Rs.1292 and from Inorganic Farming seeds cost found Rs.1399 which is higher

than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4491 and Rs.5521 respectively from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Groundnut Crop Occurred by the Organic Farming is Rs.9540 and followed by Inorganic Farming Average Production Cost is Rs.10568 which is high in the study area.

V. Green gram

It is one of the main pulse crops and rich in protein along with fibre and iron content. It can be cultivated in kharif, Rabi and summer season.

Cost of per acre Green gram Production under the Organic Farming average cost of seeds was found to be Rs.634 and from Inorganic Farming seeds cost found Rs.741 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4491 and Rs.5165 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Green gram Crop Occurred by the Organic Farming is Rs.8882 and followed by Inorganic Farming Average Production Cost is Rs.9554 which is high in the study area.

VI. Bengal gram

Bengal gram is a major pulse crop.it has variety of small, dark brown in colour and very rich in protein. And Bengal gram can be eaten in all stages of their growth.

In the study area per acre cost of Bengal gram production under the Organic Farming method average cost of seeds was found to be Rs.683 and from Inorganic Farming seeds cost found Rs.944 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4255 and Rs.5521 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Bengal gram Crop Occurred by the Organic Farming is Rs.8695 and followed by Inorganic Farming Average Production Cost is Rs.10113 which is high in the study area.

In the study organically produced Oilseeds (Groundnut) and Pulses (Green gram and Bengal gram) crops cost is less compared to Inorganic Farming. Followed by Organic Farming Average Total Cost of all the three Oilseeds and Pulses crops was found to be Rs.27117 and from Inorganic Farming Average Total cost was found to be Rs.30235 and between the both Farming average cost differences found Rs.3118 which is highest from Inorganic Farming method.

Table-5.37 Average marketing and sales cost of crops (Per Bag) in the study Area

Name of the crops	Farming Method							
	Organic Farming				Inorganic Farming			
	Packing charges	Transportation cost	Commission Paid	Total	Packing charges	Transportation cost	Commission Paid	Total
Maize, Wheat, Jowar, Ground Nut, Green Gram, Bengal Gram	110	70	74	**254**	110	87	73	**270**

Source: Field Survey

Marketing and transportation are most important for agriculture sector. Agriculture markets cover all the agricultural products moving from the farm to consumer. From the agriculture

market Farmers are getting many facilities like storage, grading, and information about agriculture as well as they are receiving good prices in markets. For sale of agricultural products, they depend on co-operative societies also. Most of the Farmers are member of co-operative societies because of they are more economically protected and faces lower risks in agriculture.

Knowing the cost of inputs is very important, where equivalently it is important to identify the cost included in marketing and sales governed called as post production cost. In the study Area one of the important systems is found, that is direct purchase. Which is packing and transportation were done by merchants and meat out all the expenses by them only. Most of the Farmers have direct purchase facility; especially merchants are purchasing organically grown crops. And also, some farmer's societies and Organic farmer's organisations are purchasing crops which are grown by Organic method. In this method Merchants are purchasing directly agricultural crops and they are meeting out the marketing and sales cost like packing and transport charges. This is one of the benefits for Farmers, on this method Farmers will not faces any transportation and marketing problems, and they get good returns.

The table-5.37 shows Average marketing and sales cost of crops (Per Bag) where, Inorganic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram Packing charges were found to be Rs.110, Transportation cost was found to be Rs.87 and Commission paid was found to be Rs.73. Organic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram packing charges was found to be Rs.110, Transportation cost was found to be Rs.70 and Commission paid was found to be Rs.74.

Table-5.38 Shows Total cost of cultivation of Organic and Inorganic Farming method in the study area (In Rupees)

Sl. No.	Name of the crop	Organic Farming			Inorganic Farming		
		Average Total Cost (Per Acre)	Total Area Sown (In Acres)	Total Cost	Average Total Cost (Per Acre)	Total Area Sown (In Acres)	Total Cost
1	Maize	9907	202.8	**2009139**	10712	235.5	**2522676**
2	Wheat	7990	46.3	**369937**	8090	49.5	**400455**
3	Jowar	7662	66.5	**509523**	7921	80	**633680**
4	Groundnut	9540	113	**1078020**	10568	110	**1162480**
5	Green gram	8882	49.5	**439659**	9554	80.7	**771007**
6	Bengal gram	8695	32	**278240**	10113	36	**364068**
Total		**52676**	**510.1**	**4684518**	**56958**	**591.7**	**5854366**

Source: Field Survey

The table-5.38 shows Total cost of cultivation of Organic and Inorganic Farming method. In comparison to the average cost per acre Organic and Inorganic, clearly states that cost of production is quite higher in Inorganic Farming under all the crops. This is probably because of application of fertilizers (Chemical and Pesticides) requires greater out pocket expenditure than the manure preparation like in Organic Farming. where, Inorganic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram Average Total Cost (Per Acre) for Organic Farming method was found to be Rs.52676 as compared to Inorganic Farming method Rs.56958. Total Area Sown (In Acres) for Organic Farming method was 510.1 as compared to Inorganic Farming method was 591.7. Total Cost for Organic Farming method was Rs.4684518 as compared to Inorganic Farming method was Rs.5854366.

The Table-5.38 is used to test the hypothesis No 1.

Ho: The Cost of Farming is higher across the Crops under Inorganic Farming as compared to Organic Farming.

The above table shows that per acre total cost of production. The study reflects that cost of production in Organic Farming is less than compared to Inorganic Farming. Because of Organic Farmers uses which are available naturally and prepared by own in their land like bio-fertilizers (Green Manure, Vermi Compost and livestock manure). Most of the Farmers are not paying for these types of fertilizers so inevitably cost of production is low in this Farming method. Hence this hypothesis is true. It is concluded that cost of production is different from Organic Farming to Inorganic Farming.

Table-5.39 Total Area sown, Total Production, Average Per acre Yield, per quintal Price, Returns per acre and Gross returns from Organic and Inorganic Method

Sl. No.	Name of the crop	Organic Farming						Inorganic Farming					
		Total Area sown (In Ac)	Total Quantity of production (In Qt)	Average Yield (Per Ac/ In Qt)	Average Price (Per Qt)	Average Returns (Per ac)	Gross returns (In Rs)	Total Area sown (In Ac)	Total Quantity of production (In Qt)	Average Yield (Per Ac/ In Qt)	Average Price (Per Qt)	Average returns (Per ac)	Gross returns
1	Maize	202.8	3248	16.01	1411	22590	**45,82,928**	235.5	2928	12.43	1364	16955	**39,92,902**
2	Wheat	46.3	228	4.92	2298	11306	**5,23,944**	49.5	185	3.73	2126	7930	**3,92,535**
3	Jowar	66.5	314	4.72	2042	9638	**6,41,188**	80	305	3.81	2102	8009	**6,40,720**
4	Groundnut	113	599	5.30	4962	26298	**29,72,238**	110	555	5.04	4960	24998	**27,49,780**
5	Green gram	49.5	179	3.61	5269	19021	**9,43,151**	80.7	239	2.96	5327	15768	**12,72,477**
6	Bengal gram	32	119	3.71	4271	15845	**5,08,249**	36	131	3.63	4524	16422	**5,91,192**
Grand Total		**510.1**	**4,687**	**9.18**	**20,253**	**185923**	**1,01,71,698**	**591.7**	**4,343**	**7.33**	**20,403**	**149554**	**96,39,606**

Source: Field Survey

The table-5.39 shows Total Area sown, Total Production, Average Yield, Price, Returns and Gross returns from Organic and Inorganic Method. The Organic Farming is comparatively performing better than Inorganic Farming. where, Inorganic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram Average Yield (Per Ac/ In Qt) was found to be 7.33 per cent as compared to Organic Farming method 9.18 per cent. Total Quantity of production (In Qt) for Organic Farming method was 4,687 as compared to Inorganic Farming method was 4,343. Gross returns for Organic Farming method were Rs.1, 01, 71,698 as compared to Inorganic Farming method was Rs.96, 39,606.

The Table-5.39 is used to test hypothesis No 2.

Ho: There is no significant relationship between production and productivity in selected crops of Organic Farming to Inorganic Farming.

The table shows that production and productivity of Organic Farming and Inorganic Farming production and productivity of selected crops. As per the above table data's this hypothesis is tested and all the selected crops in the both Farming method in that Organically grown crops per acre average yield (In Quintal) is more comparatively Inorganically grown crops. Hence the Hypothesis is true. It is concluded that with the use of Green manure, vermi compost and livestock manure Farming is getting more productivity. Hence, it can establish the Relationship of production and productivity of Farming. There is a direct and positive relation between the inputs and outputs of Farming.

Table-5.40 Comparative view of per acre average total Cost of Production, Return and Net Return of Organic and Inorganic Farming (In Rupees)

Sl. No.	Name of the Crops	Organic Farming			Inorganic Farming		
		Total Cost	Total Return	Net Return	Total Cost	Total Return	Net Return
1	Maize	9907	22590	12683	10712	16955	6243
2	Wheat	7990	11306	3316	8090	7930	-160
3	Jowar	7662	9638	1976	7921	8009	-88
4	Groundnut	9540	26298	16758	10568	24998	14430
5	Green gram	8882	19021	10139	9554	15768	6214
6	Bengal gram	8695	15845	7150	10113	16422	6309
Total		**52676**	**185923**	**52022**	**56958**	**149554**	**33444**

Source: Field Survey

Table-5.40 shows comparative Average total cost of production, Return, and Net Return of per acre by Farming methods. In the Organic Farming method all the six crops namely Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram net return is higher than Inorganic Farming method. Especially in the Organic Farming method Maize, Groundnut and Green gram Return is very high. Followed by Inorganic Farming crops of Maize, Groundnut, Green gram and Bengal gram return is good but in the study area Wheat (Rs. -160) and Jowar (Rs. -88) crops return is negative, Because of crops quality due to insects and over rainfall. From the Organic Farming method for all the six crops total production cost is Rs.52676 which less compared to Inorganic Farming. Followed by total return from Organic Farming are Rs.185923 it is higher return compared to Inorganic Farming method which is Rs.149554. Next in the net return by the Farming method per acre from Organic Farming is comparatively high Rs.52022 and low net return Rs.33444 from Inorganic Farming method.

Table-5.41 Distribution of difference between Organic and Inorganic Farming method Production cost, total returns and Net returns (In Rupees)

Sl. No.	Name of the crop	Cropping Method	Total Production Cost (Per Acre)	Difference	Total Returns (Per Acre)	Difference	Net Returns (Per Acre)	Difference
1	Maize	Organic	9907	805	22590	5635	12683	6440
		Inorganic	10712		16955		6243	
2	Wheat	Organic	7990	100	11306	3376	3316	3156
		Inorganic	8090		7930		-160	
3	Jowar	Organic	7662	259	9638	1629	1976	1888
		Inorganic	7921		8009		-88	
4	Groundnut	Organic	9540	1028	26298	1300	16758	2328
		Inorganic	10568		24998		14430	
5	Green Gram	Organic	8882	672	19021	3253	10139	3925
		Inorganic	9554		15768		6214	
6	Bengal gram	Organic	8695	1418	15845	577	7150	841
		Inorganic	10113		16422		6309	

Source: Field Survey

Table-5.41 Shows Organic Farming and Inorganic Farming Total cost per acre, Return and Net return per acre and also it shows difference between the Farming methods.

A) Production cost

In the study area production cost is comparatively low for Organic Farming and for Inorganic Farming cost of production is high for similar crops. And there is a difference of cost between the both Farming methods; highest is Bengal gram crop is Rs.1418, next for groundnut Rs.1028,

for maize Rs.805, followed by Green gram Rs.672, next Jowar Rs.259 and for wheat production Rs.100 cost difference can be seen.

B) Return

It is found that per acre total return of selected crops from Organic Farming is higher than Inorganic Farming method. Return difference between Farming method can be seen highest difference in Maize crop is Rs.5635, likewise Wheat Rs.3376, Green gram Rs.3253, Jowar Rs.1629, Groundnut Rs.1300, Bengal gram Rs.577 comparatively.

C) Net Return

Study observed that net return by Farming method, in the Inorganic Farming method wheat (Rs. -160) and jowar (Rs. -88) return is negative. And from the Organic Farming return found to be higher than Inorganic Farming method. Followed by difference of net return between the both Farming methods especially higher difference can be seen in the Maize return of Rs.6440, followed by green gram Rs.3925, next form wheat 3156, form groundnut Rs.2328, form jowar Rs.1888 and from Bengal gram difference can be seen Rs.841 form Farming methods.

Table-5.42 Benefit-Cost Analysis (In Rupees)

Sl. No.	Name of the Crop	Organic Farming			Inorganic Farming		
		Total Cost (Per Acre)	Total Return (Per Acre)	B.C.Ratio	Total Cost (Per Acre)	Total Return (Per Acre)	B.C.Ratio
1	Maize	9907	22590	**2.28**	10712	16955	**1.58**
2	Wheat	7990	11306	**1.42**	8090	7930	**0.98**
3	Jowar	7662	9638	**1.26**	7921	8009	**1.01**
4	Groundnut	9540	26298	**2.76**	10568	24998	**2.37**
5	Green Gram	8882	19021	**2.14**	9554	15768	**1.65**
6	Bengal Gram	8695	15845	**1.82**	10113	16422	**1.62**

Source: Field Survey

Benefit- Cost analysis evaluates and compares of all the costs and benefits of crops production. It includes costs of seed, Fertilizers, Labour Charges, Irrigation Charges and Land Revenue. Also benefit returns of crops sales.

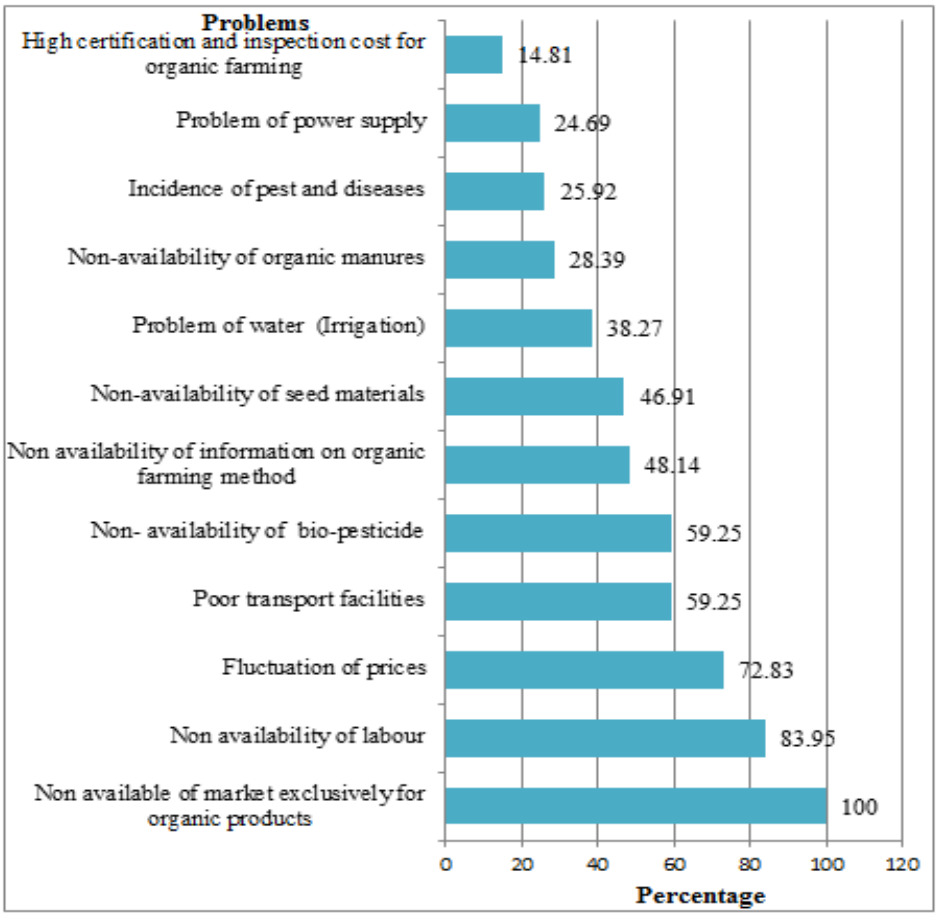
Table-5.42 has shown the benefit cost ratio. Under the Organic Farming Maize crop B.C. Ratio is 2.28 and 1.58 from Inorganic Farming method. Followed by wheat crop 1.42 B.C. Ratio under the Organic Farming and 0.98 is from Inorganic Farming. Next jowar crop under Organic Farming B.C. ratio is 1.26 and 1.01 from Inorganic Farming. Further the crop of groundnut under the Organic Farming B.C. Ratio is 2.76 and under the Inorganic Farming method 2.37 is there. The green gram crop B.C. Ratio under Organic Farming is 2.14 and 1.65 from Inorganic Farming. And Bengal gram crop B.C. Ratio is 1.82 and 1.62 respectively Organic and Inorganic Farming method. Overall, the benefit cost ratio Organic Farming B.C. Ratio is high compared to Inorganic Farming.

Table-5.43 Problems faced by Organic Crop Growers in the Study Area

Sl. No.	Particular Problems	No of Farmers faced problems	Percentage
1	Non available of market exclusively for Organic products	81	100
2	Non availability of labour	68	83.95
3	Fluctuation of prices	59	72.83
4	Poor transport facilities	48	59.25
5	Non- availability of bio-pesticide	48	59.25
6	Non availability of information on Organic Farming method	39	48.14
7	Non-availability of seed materials	38	46.91
8	Problem of water (Irrigation)	31	38.27
9	Non-availability of Organic manures	23	28.39
10	Incidence of pest and diseases	21	25.92
11	Problem of power supply	20	24.69
12	High certification and inspection cost for Organic Farming	12	14.81

Note: Total Organic Farmers are 81
Source: Field Survey

Fig-5.18 Percentage distribution of problems faced by Organic crops growers



Source: Field Survey

Table-5.43 shows very important and current problems faced by Farmers under Organic crop growers. The main problem comes in terms of market where farmer cannot properly sell their produced Organic crops. Secondly labourers are properly not available, and moreover the price change is highly in agriculture, usually growing Organic products takes lot of time than the chemical crops to grow as a result of price falls, its large cost to a farmer. Bio-Pesticides and poor transport facilities cannot be neglected as both are very important for further archives in the agriculture. Lack of Information is major problem in agriculture. To the next seed material are not available which is creating another problem to the Organic crop growers. Water (Irrigation) is the national problem and important matter till date major problems are not solved. Now Farmers are in such situation where they cannot trust for proper irrigation facilities as a result it creates discouragement among the Farmers to do more activities in agriculture. It is thus believed without water no activities can take place. Non availability of Organic manures where Farmers instead of marking it by themselves it would be better to get those in the market that could same time. Pest and disease are more in Organic Farming which one reason is in discourage on Organic growing. Power supply is also another problem but it can be tackled in most of the situation. Certification and inspection on Organic Farming is very much regret to make Organic goods competitive to chemical crops. Thus, a balanced competition can be maintained.

The Figure-5.18 shows Problems faced by Organic crop growers where, 100 per cent of the famers faced the problem of Non available of market exclusively for Organic products, 83.95 per cent due to Non availability of labour, 72.83 per cent due to Fluctuation of prices, 59.25 per cent due to Poor transport facilities, 59.25 per cent due to Non- availability of bio-pesticide, 48.14 per cent due to Non availability of information on Organic Farming method, 46.91 per cent due to Non-availability of seed materials, 38.27 per cent due to Problem of water (Irrigation), 28.39 per cent due to Non-availability of Organic manures, 25.92 per cent due to Incidence of pest and diseases, 24.69 per cent over the Problem of power supply, 14.81 per cent is due to High certification and inspection cost for Organic Farming.

Conclusion:

An Analysis on Socio-Economic profile of Organic and Inorganic Farming there is no much difference in the age, family size, land size, and assets. Numbers of Organic Farmers have increased in the study area. At the same time Organic Farmers are getting more profit, because of using naturally available resources as fertilizers like, vermin compost, Green Manure and Livestock manure. Study reveals that shortage of labour in the both Farming methods. At the present situation a greater number of Farmers are shifting to Organic Farming method. Most of the Farmers are dependent on Bore well and rain fall (49.44 per cent) because of continues functioning in the agriculture. For both Farming crops same market is functioning. Most of the crops which are grown from Organic method are getting more yield and profit.

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Chapter - 6

Findings, Suggestions and Conclusion

Introduction

Growth of Indian Economy depends on the agriculture sector. Today agriculture plays a very important role in the economic development, and also it is providing food and employment opportunity to increasing population in India. Here sustainable agriculture is necessary because of day by day growth of population. For this farmer has to practice Organic Farming method. With the help of Green manure, Vermi Compost, and Livestock manure production can be increased. In terms of Soil fertility, Nutritional Crops production and for high income Organic Farming method is profitable.

This chapter presents Final result related to Socio-Economic Condition of the Organic and Inorganic Farmers and it includes Inputs, Cost of Cultivation, Production, Marketing and Returns of both the Farming Methods. Study also mentioned the important suggestions to State and Central Government as well as Farmers. All the suggestions are based on the findings of the present study.

Findings

Socio-Economic conditions of Organic and Inorganic Farmers.

- Study found that 45.51 per cent of Organic and 54.49 per cent of the Inorganic Farmers were existed.
- The Study observed that No women Farmers found in both Farming method in the study area.
- The study found that maximum Organic Farmers were existed in the Gadag taluk.
- It is observed that NGO's and Agriculture Department of Karnataka Government are working for development and implementation of Organic Farming methods in the villages.
- Study found that a greater number of (56.74 per cent) 41 to 60 years age group Farmers are working in agriculture and less percentage of age group of 19 to 40 (23.59 per cent) and above 60 years (19.66 per cent) Farmers are involved in agriculture.
- In the study area comparatively to other taluks Shirahatti taluk has more SC, Minorities and GM respondents respectively. Mundaragi taluk has more ST respondents, and Ron taluk has more OBC respondents. In the Naragund and Ron taluk there are no SC caste respondents and also Gadag, Naragund and Mundargi taluks are not having Minorities respondents.
- It is found that 25.28 per cent of Farmers are belonging to joint family and 74.72 per cent of families are belonging to nuclear family. Study identified that Farmers need support of their family to agriculture activities.
- Study found that level of education a wide variation between the Organic and Inorganic Farmers. Overall Farmers 84.83 per cent of the Farmers are literate and remaining 15.17 per cent are illiterate. Further, 2.25 per cent of sample Farmers have got technical education like ITI and Diploma. And study observed more no of Organic Farmers are having technical education.
- The 45.51 per cent of respondents from Organic where 41.57 per cent are married similarly in case of Inorganic total 54.49 per cent of respondents 51.12 per cent of Farmers are married. With the comparison from both Organic and Inorganic married are more from Inorganic Farmers.
- It is clear that 89.9 per cent of farmers majorly dependent on agriculture either Organic or Inorganic Farmers as their main occupations. Almost 2.8 per cent of Farmers have the

occupation of driving followed by private job, to the next kirani shops and to the last includes like construction work, dairy, kooli, painting teacher and watermen etc.

- Study identifies that number of Farmers are with owned house by 81.46 per cent, out of which 44.94 per cent from Inorganic Farmers and 36.51 per cent from Organic Farmers. Likewise, government constructed houses come by 17.98 per cent where highest is from Inorganic Farmers.
- The study stated that majority of the Farmers having semi Pucca house nearly 82.58 per cent out of which Organic constitutes 41.01 per cent and Inorganic by 41.57 per cent. To the next kutcha house constitutes 10.11 per cent. Where 6.17 per cent are from Inorganic and 3.93 per cent from Organic similarly in case of pucca house constitutes around 7.30 per cent where majority of farmer's belonging from Inorganic. The overall on and average Farmers are very few belonging to Kutcha and pucca house, indicating Organic Farmers have advantage more than the Inorganic Farmers in order to raise their level of income.
- Study observed that Majority of the Farmers have the facility of electricity, drinking water and drainage by 69.10 per cent out of which 38.20 per cent have all three facilities belonging from the Inorganic and 30.89 per cent from Organic.
- In the study area under Organic Farming 42.20 per cent of Farmers owning own land where as 51.69 percentage own land under Inorganic Farming. However, when it comes to leased land both constitute 2.81 per cent. The aggregate own land from both Organic and Inorganic constitutes 94.4 per cent. This shows that many Farmers have own land were comparatively higher under Inorganic Farming.
- In the study area the farmers under the large category above 10 Acres both Organic and Inorganic are same with 3.37 per cent. In case of medium Farmers land owning between 4 to 10 Acres constitutes 15.73 per cent under Organic and 21.35 per cent under Inorganic Farming. Next Farmers belonging to 2.5 to 4 Acre, almost 20.22 per cent are from Organic and 21.91 per cent from Inorganic. Similarly, in case of marginal by 6.18 per cent under Organic and 7.87 per cent under Inorganic. To note in all the type of Farmers, highest is from Inorganic except the Farmers belonging to large acres of land where both Organic and Inorganic are same. This shows that Farmers belonging to this category are interested in growing the Organic crops.
- As the income of the farmer's increases from below 1 lakh to 8 to 10 lakhs, the percentage of Farmers income falling under the Organic Farming increases than compared to the Inorganic Farming. The Farmers whose income generated up to 8 to 10 lakhs constitute almost 0.56 per cent under the Organic Farming and negligible in the Inorganic Farming. Although the percentage of Inorganic Farmers are high still there is no much high income generated from this category. This shows that Organic Farmers have the potential to earn high return as the demand for such goods are higher and even consumers ready to pay higher prices for such items. Thus, the Organic growers have large benefits from this agriculture practice.
- The most important sources of income for the household comes from the irrigated land with 67.98 per cent where highest are from Organic Farming by 38.20 per cent and Inorganic 29.78 per cent. Similarly, in terms of income generated from dry land constitutes around 29.21 per cent being Inorganic 22.47 per cent higher than the Organic Farmers. Lastly other major sources include dairy Farming, vermicomposting constituting total 2.81 per cent out of which highest is from Inorganic Farming under this category of other sources it shows that Farmers are not sufficiently dependent on agriculture either by Organic or Inorganic but heavily dependent on other allied activities as the source of the livelihood.

- The study stated that household's distribution of assets. Out of the total assets 45.50 per cent of Farmers having Bullocks, followed by cows 52.80 per cent, sheep by 9.55 per cent, Goats by 19.66 per cent and poultry Farming by 2.24 per cent. Other assets like Agriculture equipment by 50 per cent, followed by Bike 69.10 per cent, TV almost by 81.46 per cent. Thus, to measure the socio-economic conditions in the agriculture sector the assets are considered an important indication or status. In this table on and average more than 50 per cent of Farmers own different assets.
- It is observed that water source for agriculture by Farming method. In terms of Farmers who are dependent only by rain constitute 20.79 per cent out of which 2.81 per cent are dependent from Organic Farmers and 17.98 per cent dependent from Inorganic. This clearly makes to understand that many Inorganic Farmers are falling in the category of dry land. To the next majority of Farmers are dependent on Bore well and rainfall constituting by 49.44 per cent where highest from Organic with 25.28 per cent and 24.16 per cent from Inorganic followed by canal, rivers are majorly dependent by Organic Farmers than Inorganic Farmers.

Production and Yield of Organic and Inorganic Farming Crops

- Study reveals that from the Gadag, Nargund, Shirhatti, Mundargi and Ron Taluk total 950.3 Acres has been covered for the study, out of those 426.24 acres from Organic Farming and 524.15 acres from Inorganic Farming has been studied.
- It is found that average yield under the selected crops highest was 16.01 of maize crop by Organic Farming, 12.43 yields by Inorganic Farming. Wheat Crop yield from Organic Farming is 4.92 and 3.73 average yield from Inorganic Farming. Jowar Crop 4.72 yield by Organic Farming and 3.81 from Inorganic Farming. And it is quite natural as well in terms of prices; no doubt all crops from Organic Farming are priced higher than Inorganic due to its benefits.
- Study found that average yield was 5.30 Groundnut Crop Organic Farming, 5.04 Inorganic Farming. Green gramCrop average yield is 3.61 from Organic Farming and 2.96 Inorganic Farming. Bengal Gram Crop average yield is 3.71 from Organic Farming and 3.63 average yields from Inorganic Farming. Oilseed crop average price is almost same by both the Farming method. Green gram and Bengal gram Pulses prices are high in Inorganic Farming compared to Organic Farming. Inorganically produced pulses are getting higher average prices.
- In the study area Green Manure (Quantity Shown in bag) for crops such as Maize, Wheat, Jowar, Groundnut Green gram and Bengal gram average price is Zero because Farmers are using own produced Green manure which is available in their land only. Followed by another fertilizer of Vermi Composting Fertilizer (Quantity Shown in bag) average price per bag is 419. Next Bio- Pesticide (Quantity Shown in Litter) average price is Rs.236. Livestock Manure (Quantity Shown in Tractor) average price is Rs.2945.
- In the study area Urea type of fertilizer for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram average price is Rs.356. DAP type of fertilizer average price Rs.1368. Next the Potassium type of fertilizer Rs.1102 average price and Complex type of fertilizer Rs.971 average prices.
- Study identified the reasons for the shift from Inorganic to Organic Farming. However, the some of the reasons are affected cent per cent for to the shift to Organic Farming. Change from Inorganic to Organic Farming like Quality under Organic Products, Health concerns, Soil health Sustainability, Environment concerns, and more profitability. The other reasons include cost of fertilizers, Lower productivity in Inorganic Farming are the reasons to shift to Organic Farming. And also, reasons like high prices for Organic products and motivation by

Government/ NGO/Neighbouring Farmers also reasons of shifting of Inorganic to Organic Farming.

- Study observed that Most of the Farmers (37.04 per cent) having experience between 6 to 10 years, followed by 2 to 5 years (34.57 per cent), next above 21 years (14.81 per cent) and also in between 11 to 15 years and 16 to 20 years of experience Farmers are (6.17 per cent), and to the least less than one year (1.23 per cent). The number of experiences also affects the Organic Farming as they would know many things like cost reduction technique, income in productivity, yield etc. Thus, the experience counts the overall profit maximization in the Organic Farming.
- The highest taluka where the Organic Farmers became membership comes from Gadag taluka under the Sahaja Savyav Krishikar Balaga by 24.69 per cent followed by Mundargi taluka under the organization of Siri Samrudhi Savyav Krishikar Samithi by 20.99 per cent, and next both the Shirahatti taluka Shri Bhomitayi Savayav Raitar Sangha and Ron taluka Sukmuneshwar Savayav Krishikar Sangha has 18.52 per cent of membership in organization and to the least from Nargund taluka under the organization of Basaveshwar Savyav Krishikar Sangha 17.28 per cent. These organizations are important for the Organic Farmers as these help the Farmers in different field like preparation of manure, cost of cultivation reduction, techniques in improving productivity, and to get good prices and market for different Organic crops and also assisting to Farmers if any financial need. These organizations are getting training and information by Agriculture department and Some NGO's.
- In the study area Gadag is the highest taluka where trained Farmers in terms of Organic Farmers are more followed by Mundaragi with 20.99 per cent and to the least Nargund with 17.28 per cent under various NGO's like BAIF, SARDS, Kisan Bharati trust,etc.
- It is observed that under the financial assistance majority of Farmers not received any benefits covering almost 77.78 per cent. However, in terms of non-financial assistance cent per cent of Farmers have received assistance in setting various requirements for the Organic Farming method from NGO's.
- It is evident from the study that NGO's have helped most of the Farmers to receive both financial and non-financial assistance for Organic Farming.
- In terms of certify agency, it is clear that many NGO'S are worked for the land certification for the Organic Farming at different talukas.
- Study found reasons for choosing only Inorganic Farming method. The cent percentage of Farmers who said the reason for choosing Inorganic Farming due to fast production, immediate work and increase in food production followed by other reasons like convenient to use, availability of fertilizers and small-scale land holding.

Production Cost of Organic and Inorganic Farming Crops

- Study identified Machine labour (Per day average charge) was Rs.1160 Organic Farming, Rs.1095 Inorganic Farming. Bullock pair charges (Pair/per day average charge) was Rs.1098 Organic Farming and Rs.1062 Inorganic Farming. A men labour charge (Per day average charge) was Rs.290 Organic Farming and Rs.283 Inorganic Farming. Women labour charges (Per day average charge) were Rs.197 Organic Farming and Rs.196 Inorganic Farming.
- Average Family and hired labour for various activities of Organic Farming where, irrigation work continues, Ploughing, Waste management, Organic Manure application, Spraying Bio pesticides, Harvesting, Transportation 2 times by family labour, most of the times by Men

Labour as compared to that of female labour. Hired Labour both men and women were found to be high in case of harvesting activities as compared to other activities.

- Average Family and hired labour for various activities of Inorganic Farming where, irrigation work continues, Ploughing, Waste management, Fertilizer application, spraying pesticides, Harvesting, Transportation 2 times by family labour, most of the times by Men Labour as compared to that of female labour. Hired Labour both men and women were found to be high in case of harvesting activities as compared to other activities.
- Production cost of maize per acre under Organic Farming average cost of seeds was found to be Rs.1423 .and from Inorganic Farming seeds cost found Rs.1543 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4727 and Rs.5521 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Maize Crop Occurred by the Organic Farming is Rs.9907 and followed by Inorganic Farming Average Production Cost is Rs.10712 which is high in the study area.
- The Per acre cost of wheat production under the Organic Farming method average cost of seeds was found to be Rs.633 and from Inorganic Farming seeds cost found to be Rs.645 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.3600 and Rs.3797 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Wheat Crop Occurred by the Organic Farming is Rs.7990 and followed by Inorganic Farming Average Production Cost is Rs.8090 which is high in the study area.
- In the study Jowar production of per acre cost under Organic Farming method average cost of seeds was found to be Rs.305 and from Inorganic Farming seeds cost found to be Rs.476 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.3600 and Rs.3797 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Jowar Crop Occurred by the Organic Farming is Rs.7662 and followed by Inorganic Farming Average Production Cost is Rs.7921 which is high in the study area.
- In the study organically produced Cereals crops cost is less compared to Inorganic Farming. Followed by Organic Farming Average Total Cost of all the three cereals crops (Maize, Wheat and Jowar) was found to be Rs.25559 and from Inorganic Farming Average Total cost was found to be Rs.26723 and between the both Farming average cost differences found Rs.1164 which is highest from Inorganic Farming method.
- The Per Acre cost of Groundnut production under the Organic Farming average cost of seeds was found to be RS.1292 and from Inorganic Farming seeds cost found Rs.1399 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4491 and Rs.5521 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In both Organic and Inorganic Farming method average maintenance of irrigation

charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Groundnut Crop Occurred by the Organic Farming is Rs.9540 and followed by Inorganic Farming Average Production Cost is Rs.10568 which is high in the study area.

- The Cost of per acre Green gram Production under the Organic Farming average cost of seeds was found to be Rs.634 and from Inorganic Farming seeds cost found Rs.741 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4491 and Rs.5165 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Green gram Crop Occurred by the Organic Farming is Rs.8882 and followed by Inorganic Farming Average Production Cost is Rs.9554 which is high in the study area.
- In the study area per acre cost of Bengal gram production under the Organic Farming method average cost of seeds was found to be Rs.683 and from Inorganic Farming seeds cost found Rs.944 which is higher than Organic Farming. Followed by average fertilizer cost of Organic Farming are Rs.4255 and Rs.5521 from Inorganic Farming. And Average Labour cost is found Rs.2745 from Organic and Rs.2636 from Inorganic Farming comparatively less than Organic Farming. In the both Organic and Inorganic Farming method average maintenance of irrigation charge and average land revenue is same, respectively Rs.1000 and Rs.12 per Acre. And the average total Production Cost of Bengal gram Crop Occurred by the Organic Farming is Rs.8695 and followed by Inorganic Farming Average Production Cost is Rs.10113 which is high in the study area.
- In the study organically produced Oilseeds (Groundnut) and Pulses (Green gram and Bengal gram) crops cost is less compared to Inorganic Farming. Followed by Organic Farming Average Total Cost of all the three Oilseeds and Pulses crops was found to be Rs.27117 and from Inorganic Farming Average Total cost was found to be Rs.30235 and between the both Farming average cost differences found Rs.3118 which is highest from Inorganic Farming method.
- Study identified Average marketing and sales cost of crops (Per Bag) where, Inorganic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram Packing charges was found to be RS.110, Transportation cost was found to be Rs.87 and Commission paid was found to be Rs.73. Organic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram packing charges was found to be Rs.110, Transportation cost was found to be Rs.70 and Commission paid was found to be Rs.74.
- Total cost of cultivation of Organic and Inorganic method where, Inorganic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram Average Total Cost (Per Acre) for Organic Farming method was found to be RS.52676 as compared to Inorganic Farming method RS.56958. Total Area Sown (In Acres) for Organic Farming method was 510.1 as compared to Inorganic Farming method was 591.7. Total Cost for Organic Farming method was Rs.4684518 as compared to Inorganic Farming method was Rs.5854366.
- Through hypothesis testing it is found that the study reflects that cost of production in Organic Farming is less than compared to Inorganic Farming.

- Study found that Inorganic Farming method for crops such as Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram Average Yield (Per Ac/ In Qt) was found to be 7.33 per cent as compared to Organic Farming method 9.18 per cent. Total Quantity of production (In Qt) for Organic Farming method was 4,687 as compared to Inorganic Farming method was 4,343. Gross returns for Organic Farming method were 1, 01, 71,698 as compared to Inorganic Farming method was 96, 39,606.
- Through hypothesis testing it is found that all the selected crops in the both Farming methods, organically grown crops per acre average yield (In Quintal) is more comparatively Inorganically grown crops. Hence the Hypothesis is true.
- In the Organic Farming method all the six crops namely Maize, Wheat, Jowar, Groundnut, Green gram and Bengal gram net return is higher than Inorganic Farming method. Especially in the Organic Farming method Maize, Groundnut and Green gram Return is very high. Followed by Inorganic Farming crops of Maize, Groundnut, Green gram and Bengal gram return is good but in the study area Wheat (-160) and Jowar (-88) crops return is negative, Because of crops quality due to insects and over rainfall. From the Organic Farming method for all the six crops total production cost is Rs.52676. which less compared to Inorganic Farming. Followed by total return from Organic Farming are Rs.185923, it is higher return compared to Inorganic Farming method which is Rs.149554. Next in the net return by the Farming method per acre from Organic Farming is comparatively high Rs.52022 and low net return Rs.33444 from Inorganic Farming method.
- In the study area production cost is comparatively low for Organic Farming and for Inorganic Farming cost of production is high for similar crops. And there is a difference of cost between the both Farming method highest is Bengal gram crop is Rs.1418, next for groundnut Rs.1028, for maize Rs.805, followed by Green gram Rs.672, next Jowar Rs.259 and for wheat production Rs.100 cost difference can be seen.
- It is found that per acre total return of selected crops from Organic Farming is higher than Inorganic Farming method. Return difference between Farming method can be seen highest difference in Maize crop is Rs.563, likewise Wheat Rs.3376, Green gram Rs.3253, Jowar Rs.1629, Groundnut Rs.1300, Bengal gram Rs.577 comparatively.
- Study observed that net return by Farming method, in the Inorganic Farming method wheat (Rs. -160) and jowar (Rs. -88) return is negative. And from the Organic Farming return found to be higher than Inorganic Farming method. Followed by difference of net return between the both Farming methods especially higher difference can be seen in the Maize return of Rs.6440, followed by green gram Rs.3925, next form wheat 3156, form groundnut Rs.2328, form jowar Rs.1888 and from Bengal gram difference can be seen Rs.841. form Farming methods.

Problems Relating to Organic Crops Growers

- The 100 per cent of the famers faced the problem of Non availability of market exclusively for Organic products.
- In the study area 83.95 per cent of Farmers are facing problem of Non availability of labour.
- Study found that 72.83 per cent of Organic crop growers are facing Fluctuation of prices in the market.
- The 59.25 per cent of Farmers were expressed problem of Poor transport facilities.
- Non- availability of bio-pesticide problem faced by 59.25 per cent of Organic crop growers.

- In the study area 48.14 per cent of the Farmers are facing Non availability of information on Organic Farming method.
- It is found that 46.91 per cent of Farmers have expressed their opinion about Non-availability of seed materials.
- The 38.27 per cent of Farmers are not satisfied with Irrigation facility.
- Study found that 28.39 per cent of Farmers are facing problem of Non-availability of Organic manures.
- Study examined 25.92 per cent of Organic Farmers are facing Problem of Incidence of pest and diseases.
- The 24.69 per cent of the Farmers were facing Problem of power supply.
- In the study area only 14.81 per cent of Farmers were expressed about High certification and inspection cost for Organic Farming.

Suggestions

- District Agriculture Office should encourage the Farmers to get benefits of government for agricultural activities and allied activities.
- Government has to provide information to Farmers regarding agriculture innovation and technological development.
- Farmers should come forward to shift from Inorganic Farming to Organic Farming method.
- Government has to establish exclusive market for organically grown crops. This will encourage Organic Farming and increases importance of Organic crops.
- Government and NGOs have to encourage new generation to Organic Farming by some facilities and polices.
- Agriculture office has to supply sufficient and good quality seeds.
- Farmers try to establish water ponds in their field to use water resource efficiently.
- At present supply of power for agriculture is not enough to meet all the production activities. Power supply Authorities should try to supply sufficient power to agricultural fields.
- Farmers self-take necessary steps to control usage of Chemical fertilizers. This will help us to control negative effects on human being and environment.
- The government has to announce good support prices for crops. This will increase farmers income.
- Government should provide training regarding preparation of Vermi compost and Green manure by availability natural resources. It will create self-sufficiency in fertilizer production and utilization of agriculture waste.
- Government should give importance for implementation of Organic Farming related programs. This will increase the farmer's interest on Organic Farming.
- Government should make efforts to implement financial benefit schemes for agricultural Farmers.
- More Number of soils testing labs establishment is required. This will be useful for Farmers to know their field soil fertility level.

- Conduct agricultural field tour to other states for Farmers to know the success farmer's fields and to get more information regarding latest methods in agricultural cultivation.
- Government should give a greater number of prizes, like Best farmer of Taluk, District and state for Farmers to encourage them.
- Publication of Agriculture Magazines, Bulletins in all languages to Farmers for to get information about changes in cropping patterns and Technology as well as progress of agriculture sector essentialities.
- Development of Transport Facilities is required for easy functioning of Agriculture products transportation.
- Government has to increase certification and inspection for Organic Farming fields to develop a Farming system and improve soil fertility as well as grow quality crops.
- The government should create awareness about Organic Farming. It will give good quality products to consumers.
- Government has to establish Separate wing for Organic Farming in District and Taluka Agriculture offices.
- Government has to establish separate Organic Farming University and Colleges. This will increase more awareness and information about Organic Farming and also it attracts youth to agriculture sector.
- Government should try to add agriculture subjects in School level to higher education level. It gives importance of agriculture in our life.
- Government should try to establish direct purchase system of organically grown crops. This will increases Organic Farming land size and number of Farmers.
- Government should give loan facilities with less rate of interest to Farmers. This will develop agriculture sector.
- Government should provide bore well facilities to farms.
- Special benefits for Organic crop growers should be done by government.
- Government should concentrate on Overall Development of Agriculture activities and allied activities.
- District Agriculture Office and Raith Sampark Kendra have to supply Equipments and agriculture related material with subsidy prices.
- Government should observe that whether all the farmers are getting government facilities regarding agricultural subsidies, support prices and financial assistance.
- Farmers Associations should conduct tour to success farms. This type of visits will help to Farmers to improve their field and production.
- Government has to initiate to develop and upgrade Raith Samprak Kendra. This measure will help to improve service of RSK to Farmers like providing information, supply of seeds and subsidy-based fertilizers can provide to Farmers.
- Establishment of union of Organic Farmers will create good development in Farming method and each other can share their views on method, Skills, Knowledge, innovation ideas and information about Organic Farming.
- Government should provide more number of insurance facilities to crops. This will help to Farmers those face losses in their crops production.

Conclusion

The Socio –Economic condition of the Farmers plays an important role in the development of agriculture. The social and economic factors are related to the individual, family and community have a base for agriculture. In the study 25.28 per cent of Farmers living with joint family, it shows for Farmers there is a need of support of family members. And overall, 84.83 per cent of Farmers are literate.

The Study found that Organic Farmers have the potential to earn high return as the demand for such goods are higher an even consumer is ready to pay higher prices for such items. The current village level study can be useful for establishing good development programs and activities to improve Farming methods.

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ABOUT THE BOOK

Agriculture system plays a very important role in improving food and nutrition security. Agricultural practices have been carried out with irrational use of chemical inputs over the past four decades, which has resulted in not only the loss of natural habitat balance but also many hazards like soil erosion, depletion of ground water, soil salinization, pollution, genetic erosion, ill effects on the environment, reduced food quality, and an increased cost of cultivation. This book will help us in understanding the organic and Inorganic farming activities in Karnataka. The major topics covered in the book include introduction, review of literature and comparison of organic and Inorganic farming. Also it includes Socio-economic condition of both organic and inorganic farmers.

The subject matter has been presented in simple language with supported data and research findings. The book includes more than 67 tables, 20 figures and 3 charts. It is an excellent book for students of Economics, agriculture Economics and commerce. It is also a useful reading for policy makers and researchers.

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