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Book Review

Niravu Organic Village - A Study on Niravu Organic Village Model, Vengeri, Kozhikode District, Kerala

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Chapter - 1

Design of Study

Introduction

The unsustainability of modern agricultural practices has led farming communities, the World over to look for alternatives. The majority of these alternatives indicate a return to traditional, eco-friendly practices; organic farming is one among them. Organic farming over the last few decades has proved to be successful; but the differences in culture, ecology and geographical factors necessitate adoption of situation-specific principles and techniques in agriculture. A large sum of Kerala farmers are in the path of experimenting innovations in this field, some have succeeded, others are in the process of evolution and new options are being testing out in organic farming. One of the main arguments against organic farming is that it would not meet the food requirements of an ever-increasing population. But a brief look at the era of modern agriculture would show that, in spite of the booming agricultural production, more people die of starvation and malnutrition than before. Inequitable distribution of food rather than insufficient production is the root cause of the problem.

Eco-friendly (organic farming) farming is the integration of biological, cultural, and natural inputs including integrated disease and pest management practices. History of organic farming can be traced back from thousand years ago. Traditional type of farming was the original type of agriculture and has been practiced for past many years and it is now considered to be organic farming. The industrial revolution had introduced inorganic methods (use of chemical fertilizers and pesticides) of cultivation practices, and had serious side effects on human life and to the environment. Agricultural chemicals, including hormones, pesticides, fertilizers and antibiotics leave residue in food and release toxic chemicals. These pesticide residues and toxins are the causative of cancer and genetic damages in human.

Presently the major problem faced by agriculture sector is quality in food crops and production-consumption gap. The quality of food crops can be regained only if we strictly focus on organic farming, and production-consumption gap can be balanced by bringing out new innovations and technical assistance in organic farming. Apart from this, various intervention strategies were adopted by Government to provide a solution for the existing problems in agriculture. One of such strategy is Haritha Keralam Mission (2017) by Kerala Government, and the mission aims to solve problems in sanitation, preserving water sources, agriculture development, and promotion of organic farming in Kerala.

Niravu Organic Village is a Non-Governmental Organisation (NGO) in Vengri Panchayath of Kozhikode district. They are the promoters of organic farming in Kerala, and they are named as the first organic village in Kerala. In this model they are executing the Zero-budget waste management along with Zero pesticide organic farming for the past ten years.

Statement of the problem

"The modern agricultural chemicals –fertilizers and pesticides leave residues in the food we take. These residues are the causative of cancer and infertility in human, which is a dangerous problem faced by mankind these days"(Kerala State Organic Farming Policy, Strategy and Action Plan 2008).

Recent studies made by the Pathology and Oncology department of Kozhikode medical college in collaboration with Niravu residence association Vengeri, states that, a large percentage of Kerala women, particularly homemade are suffering from the most dangerous and non curative disease –cancer. We generally have a misbelieve that smoking and alcohol consumption are the sole reason for cancer, but the reality was something different and was really a shocking one. It was crystal clear from the result of studies that, pesticides-socked vegetables and fruits brought mainly from outside the state are the reason for this tragic disease. The residues of the chemicals and pesticides will not get digested and they get precipitated in our digestive system and later these will be converted into cancerous cell. These results made Niravu residences association to rethink on further purchase of vegetables from other States and decided to cultivate vegetables for their own consumption needs. Now they are having a new culture of 10 years successful model of organic farming. The members of Niravu, a collective formed by 101 households in Vengeri near Kozhikode district in Kerala, are successfully doing zero-budget organic farming.

Here lies the importance of Niravu organic Village Model, by which people can free from tragic diseases and have a healthy -fertile generation in the near future. Hence through this project, an attempt is made to study the role of Niravu organic village model in Vengeri Panchayath of Kozhikode district.

Objective of the Study

- To examine the role of NIRAVU ORGANIC VILLAGE model in organic farming, in Vengeri Panchayath.

Methodology

The study was carried out in Niravu residence association and Niravu farmers club in Vengeri panchayath, Kozhikode. The aim of NIRAVU ORGANIC VILLAGE is to spread their mission through -"connecting farmers" by which, they claim that sustainable agriculture and a viable community can be raised up.

Observations made:

- Socioeconomic profile of farmers.
- Size of land holding.
- Cropping system and cropping pattern.
- Source of fund.
- Cost of cultivation
- Production and Productivity
- Intensity of farmers towards organic village model
- Services received from panchayath, Government, NABARD.
- Benefits as a member of Niravu village Model
- Awareness
- Constraints faced by members.
- Suggestions to improve the constraints.

Sampling methodology

The study was based on sixty organic farmers of Niravu residence and selected and surveyed using a structured interview scheduled. The respondents were selected using simple random sampling to study the role of Niravu organic village model in Vengeri panchayath and benefits they have accomplished through this zero pesticide organic farming.

Data collection tools

The study was mainly based on primary data and Secondary data.

Primary data was collected by conducting survey with the members of Niravu residence using a well structured interview schedule. Secondary data on organic farming, and benefits were collected from the website of Niravu Organic Village (www.niravu.in), Karshakashree and other Magazines, Articles on Haritha keralam mission2016, and published thesis etc.

Statistical tool for data analysis:

The statistical tools used in the study of Niravu organic village model were

- Percentage analysis
- Indices.

Indices were constructed to study the awareness on organic farming, perceived constraints and benefits received from the Niravu Organic Village Model. For the construction of indices, the responses of farmers were marked in a three point scale like Positive, Neutral and Negative and scores ranges from 3, 2, and 1 respectively.

$$\text{Awareness Index} = \frac{\text{Total scores of awareness level} * 100}{\text{Maximum score} * \text{No. of respondents}* \text{No. of statements}}$$

$$\text{Constraints Index} = \frac{\text{Total scores of constraints level} * 100}{\text{Maximum score} * \text{No. of respondents}* \text{No. of statements}}$$

$$\text{Benefits Index} = \frac{\text{Total scores of constraints level} * 100}{\text{Maximum score} * \text{No. of respondents}* \text{No. of statements}}$$

Scope of Study

The study confers to the members of Niravu residence only. The study focused on role of Niravu organic village model in organic farming and assessing their benefits and adaptability. The study also intended to provide awareness on organic farming to the people by suggesting this model all over Kerala.

Limitations of the Study

One of the main constraints in the study was shortage of time. Due to shortage of time the extent to which the study can be made was restricted. The respondents were only available on Sundays, so it was another constraint to complete the survey. Hence it took more than a month to complete the survey.

Chapter - 2

Review of Literature

A literature can be just simple summary of the sources of literature, but it usually has an organisational pattern and combines both summary and synthesis. This chapter highlights the concept, need, advantages, perception, opportunity, challenges in organic farming. Organic farming is widely followed not only in India but also in other parts of the World as it results in protecting soil fertility, increase soil nutrient contents and healthier products when compared to inorganic farming system.

Jahroh (2010) made a study on the topic "Organic Farm development in Indonesia: lesson learned from Organic farming in west Java and North Sumatra" The objectives of the study were: (1) to investigate the appropriate approaches for the development and extension of organic farming, (2) to give an overview of the process of organic farming development in case of West Java and North Sumatra, and (3) to investigate the importance of joint marketing of organic produce. A survey was conducted from August 2007 to May 2008 in North Sumatra and in West Java. The results of the study showed that, the practice of conventional agriculture had threatened the sustainability of the Earth and human health. The intensive use of chemo-synthetic inputs had degraded agro-ecosystems and human health. So the study emphasised on adoption of organic farming, by which farmers can earn higher income and healthy life.

Institutional Adaptive Capacity of Organic Farmers Associations in growing Organic Agrifood Systems" in Bioaustria was a study conducted by Paxton and Bingen (2010). In the study an analytical approach was used for analyzing the influence of institutional change on the Adaptive Capacity of organic farmers associations in growing organic agrifood system. The study founded that, due to the growth in organic farming and the consolidation process, Adaptive Capacity of organic farmers associations in growing organic agri food system of Bioaustria were increased.

Oyesola and Olutokunbo (2011) investigated farmers‟ perception of organic farming in selected Local Government areas of Ekiti State, Nigeria. The objectives of the study were to assess (1) The demographic characteristics of farmers, (2) Identifying the major crops grown by the farmers, (3) Assessing farmers‟ sources of information on organic farming, (4) Examining farmers' knowledge of organic farming, (5) Assessing farmers' perception about organic farming. A multi-stage sampling technique was used to select 160 farmers in the study area. The data collected was analyzed using frequency counts, percentages and Chi-square. The study depicted that; the farmers with high knowledge of organic farming tend to have a favourable perception towards organic farming than those who have little knowledge of organic farming. The Policy recommendations emanating from the study were: active involvement of youths and women in organic crop production, improvement of information sources on organic farming, and enlightenments on various organic methods of weed, pest and disease control through the regular sources of information on organic farming. The suggestions arrived from the study were; Farmers should be motivated through credit facilities and discouragement of inorganic farming in order to ensure sustainable production of food, since the farmers have a favourable perception towards organic farming.

Mirela and Miloradic (2012) conducted a study with objective of assessing the concept of organic farming in terms of its profitability for producers. The indicators used to study the profitability were yield, price, cost and government grants (subsidies).The aim of the study was to analyze the impact of these factors on the profit, and differences between organic and conventional production. The study came up with a conclusion that organic farming is profitable and had significant relationship with yield, price and cost.

Environmental impact of organic vs. conventional agriculture –A Review was the study conducted by Dominika(2013. The study opined that use of modern highly specialized agricultural machinery is often associated with cultivation of plants in large- scale monocultures requiring significant transformation of the agricultural landscape, including regulation of soil water conditions, surface levelling, removing woodlots, hedges and field margins. The research findings indicated that the environmental, social and economic factors have potential effect on organic agricultural system.

Organic farming an analysis was the study conducted by Daniela(2013). The study opined that organic farming is an alternative to traditional agriculture. The study was based on the data and other information collected from EU data base and reports on organic farming. Analysis and synthesis methods were utilized in order to put into evidence the main aspects, features and trends in the field of organic farming. The study summarised as agricultural future of this century is mainly focused on achieving healthy, maintaining soil fertility, optimizing agricultural production and the environment, without neglecting the issue of food security.

Rimal and Dhakal (2015) in their study on Comparative analysis on organic and non-organic farms in South Asia, found that most of the world's undernourished people were suffering from chronic hunger and are living in South Asia. To analyze the difference in crop productivity between organic and non-organic farms a meta-analysis was conducted with the estimation of effect size and by testing the statistical significance of relative organic yield over absolute non-organic yield. The results of the study showed that average productivity of organic farms was approximately 5 percent less than non-organic, but the difference was statistically insignificant with substantial variation among different crops.

Organic farming in India was a study conducted by Babu and Dhananjaya (2015). The study opined that in India though organic farming system was followed in ancient period, but from the point of increasing food production and to become self sufficient in food production modern farming system or conventional farming system was adopted, later conventional agriculture resulted in major ill effects like reduction in soil fertility, food toxicity, increasing cost of cultivation and low returns. The study was mainly based on secondary data. The statistical tools used to analysis the data were Simple average along with standard deviation and coefficient of variation.

Economic costs and returns from organic farming in Oyo state, Nigeria was a study conducted by Alawode (2015). The study evaluated the costs and returns of organic farming using the farmers in Akinyele Local Government of Oyo state, of Nigeria. An interview schedule was administered to the respondents to elicit useful information. The analysis was based on input and output data collected from one hundred and eighty farmers selected at random from the area, out of which eighty-eight used organic farming, fifty-eight used non-organic farming and thirty-four used both farming systems. The data was analysed using descriptive statistics, Duncan Multiple Range Test (DMRT), t-test group statistics and gross margin analysis. Results of the analysis indicated that, 48.9 percentage of the respondents adopted organic farming system, 32.2 percentage adopted non-organic farming system while 18.9 percentages adopted both organic and non-organic farming systems. The findings emanating out of the study are, that it is more profitable to produce vegetable and maize organically. The study suggested that an intensified awareness should be made to improve the level of participation of farmers in organic farming, recommendation of organic products to people, and government policies that encourage farmers to go into organic farming, especially by making their products readily disposable in already prepared market at encouraging prices.

Galang, and Parayno(2015) made a study in Central Luzon, Philippines on the topic "Going organic: Understanding the organic vegetables production environment" The study was based on Survey, key informants interview and focus group discussion. The data were collected from 72 organic vegetable farmers and 32 conventional vegetable growers from the provinces of Nueva Ecija, Pampanga, and Zambales. Descriptive statistics, cost and return, input utilization, technology attributes, and extent of technology utilization were used in data analysis. Results indicated that despite the noted inadequacies, the bio-physical, socio-economic and institutional environment of organic vegetable production in Central Luzon can provide a good opportunity that can be tapped in

the promotion and adoption of organic vegetable production in the region. Descriptive statistics were used to qualify and summarize descriptive data. The result was summarized as despite the noted inadequacies, the bio-physical, socio-economic and institutional environment of organic vegetable production in Central Luzon can provide a good opportunity that can be tapped in the promotion and adoption of organic vegetable production in the region.

Christian and Kummer (2015) conducted a study on the topic "keeping the Actors in the Organic System Learning: The Role of Organic Farmers" Experiments". The study aimed on generating programmes that create process that leads to farmers' innovations is rarely studied or described precisely in agricultural sciences. The research was based on the structure and role of farmers experiments by conducting semi- structured interviews of 47 organic farmers in Austria and 72 organic/agroecology farmers in Cuba in 2007 and 2008. Seventy six more structured interviews explored the topics and methods used by Austrian farmers they conclude the study as the farmers were ready to "trying something new" Dubey (2015) made a study on the topic "Role of Green manuring in Organic Framing". The study opined that green manuring was something that is important like air to breath. The study depicts that Soil health degradation is one of the most important problem faced by the farmers. The observations of the study were; land is becoming barren, the uncontrolled use of chemical fertilizers is deteriorating the soil physical, chemical and biological properties, The organic farming depends on organic manures like farm yard manure, compost, green manuring etc. Therefore, green manuring is one of the most important type of manure used in organic farming. Green manures are fertility building crops and may be broadly defined as crops grown for the benefit of the soil. The green manuring crops improve the humus, organic carbon, nitrogen and soil microbial growth. Green manuring can bring a number of advantages to the grower. Green manuring leads to the addition of organic matter to the soil. Green manuring crops increase the biological activity in the soil. The result of the study implies that crops improve soil structure, Green manure crops helps in reducing soil erosion. They help to increase the supply of nutrients available to plants. These crops help in reducing leaching losses. It is also reported that green manuring crops help to suppress weeds, reducing pest and disease problems, providing supplementary animal forage.

A study made by Ehirim and Onyeagocha (2015)on the topic "Farming Techniques, Environmental Challenges, and Technical Efficiency of Sweet Potato Production in Abia State, Nigeria". A multistage sampling procedure was employed in the study. The findings of the study were environmental factors affect farming both in good bad way, it cannot be predicted

Shelke and Katkade (2016) conducted a study on the topic "Economic study of constraints and suggestions faced by the farmers in tomato production in Kolar district of Karnataka", the study opined that Although India occupies second position in terms of number of certified organic farms (44,926), it is 13th in terms of area under organic farming representing only 0.3 per cent of total agricultural lands. This scenario appears poor compared to many other countries. Farmers apprehension towards organic farming in India is rooted in non availability of sufficient organic supplements, bio fertilizers and local market for organic produce and poor access to guidelines, certification and input costs. Capital-driven regulation by contracting firms further discourages small farm holders. An integrated effort is needed from government and nongovernment agencies to encourage farmers to adopt organic farming as a solution to climate change, health and sustainability issue. The study was based on Multistage sampling design Modern innovations and technology diffusion to agriculture coupled with massive demand of food grains by burgeoning human population transformed the agriculture from a circular causation mode to a linear flow model with complete dependence on external inputs of synthetic fertilizers and pesticides are analysied in the study. The result of the study came up with the conclusion that, Massive use of chemicals although increased agricultural yield by many folds, significantly contributed to environmental degradation including green house forcing. The modern concept of organic farming (OF) emerged in response to the questions raised on health, environment and sustainability issues.

Makadia and Patel (2016) made a study on the topic "Prospects, status and marketing of organic products in India-A Review". The study locates the prospects, status and marketing of organic farming and documents the Indian experience in organic production and trade, Organic agriculture has grown out of the conscious efforts by inspired people to create the best possible relationship between the earth and men. They concluded the study as, major challenge today is certainly its entry into the policy making arena, its entry into anonymous global market and the transformation of organic products into commodities. During the last two decades, there has also been a significant sensitization of the global community towards environmental preservation and assuring of food quality. The result of the study was that, ardent promoters of organic farming consider that it can meet both these demands and become the mean for complete development of rural areas.

A study on "Organic Approaches for sustainable production of horticultural crops: A review" made by Ram and Pathak (2016) the study depicits that Sustainability in horticulture/agriculture is one of the major concerns of humanity as on today. Indiscriminate use of agro-chemicals and water over 5 - 6 decades, have adversely affected soil fertility, crop productivity, produce quality and particularly the environment in many parts of the world. As alternative, number of organic farming systems such as Biodynamic Farming, Natural Farming, Nateuco Farming, Panchagavya Farming, Rishi Krishi, Jaivik Krishi, Homa organic farming etc. emerged in different parts of the country. The study has concluded that to conceive an organic production system, which is capable of enhancing rhizosphere and biosphere simultaneously which we are trying to popularise as "Homa Jaivik Krishi. Over the decade of experience, the result states that, if applied in organic environment with organic mind set, Homa Jaivik Krishi (HJK) has capacity to assure sustainable agriculture even at this juncture.

Can Organic Farming Be an Alternative to Improve Well-Being of Smallholder Farmers in Disadvantaged Areas? Was A Case Study

of Morogoro Region, Tanzania. Miyashita (2016) has assessed the contribution of organic farming to improvements in the wellbeing of smallholder farmers as measured by crop productivity, profit, and food security among smallholder farmers in Morogoro Region, Tanzania. The results showed that organic farmers had diversified crops and availability of water for irrigation, and they had better selling situation of their crop products. It also showed significant differences in profit and food security between organic and conventional/traditional farmers. Profit among organic farmers was revealed to be more than ten times of profit among conventional/traditional farmers, with less expenditure for farm activity and higher income from their crops. Qualitative data was collected from 24 organic farmers were selected and group discussions was conducted. Frequencies and percentages were used to summarise farming practices and products selling. Productivity, profit and food security were compared between organic farmers and conventional/traditional farmers by using independent samples T test. Food security was analysed with indicators of food consumption score and dietary energy consumed, and compared between two farming groups by using independent samples T test. Each respondent was asked about food items consumed at home over a period of previous 7 days. Multiple linear regressions were used to determine impacts of some variables on productivity, profit and food security. Content analysis was used to analyse the challenges of organic farming. The study was concluded such as; that organic farmers had diversified crops and availability of water for irrigation, and they had better selling situation of their crop products. The study also showed significant differences in profit and food security between organic and conventional/traditional farmers.

Famers perception on organic manure usage among arable crop farmers, Nigeria was studied by Shehu and Aliyu (2016). The study analysed the perception of organic manure use among arable crops farmers in Jalingo Local Government Area Taraba State, Nigeria. Structured questionnaires were used to collect primary data from 114 respondents who were proportionately and randomly selected. The data were analyzed using descriptive and logit regression model. The study concluded that Application of organic manure, transportation to farm, accessibility and availability of the organic manure were the serious constraint to the use of organic manure by the respondents. The farmers had favourable perception towards the use of organic manure. As the farm size increase, the more the tendency of using organic manure. The study recommended that Government should support farmers and introduce policies that will enable the farmers to own and cultivate large scale farms.

Kunnal and Nethrayini (2017) made a study on the topic, "Socio-economic analysis of organic and non-organic vegetable growers in Belgaum district of Karnataka". The study depicts that India is a leading vegetable producing country in the world with an area of 9541 thousand hectare with the annual production of 168300 thousand tonne (Anonymous, 2015). Karnataka state is one of the leading vegetable producing state in the country with a production of 82.50 lakh tonne. The study was conducted in Belgaum district, as the organic cultivation of vegetable is practiced largely in the district. Two major vegetables largely grown namely tomato and chilli were selected for the study. Organic farming is emerging trend and practiced throughout the district in cultivation of vegetables. In order to study the socio-economic characters, causes for shifting to organic cultivation of vegetables, costs involved, yields, returns in organic cultivation of vegetables and problems faced by the farmers of organic vegetables, 30 farmers each practicing organic cultivation of tomato and chilli and 30 farmers each practicing non-organic cultivation of tomato and chilli spread over the district of Belgaum were selected randomly for the study. The data were analysed using tabular presentation method and Garrett ranking technique. The averages and percentages were worked out. The results of the study revealed that the yields on organic farms were found to be lower than inorganic farms. Though organic farming gives relatively lower yields in the initial years, its continuous practice will help to build up the soil fertility, thereby to get increased yield in the later years.

An economic analysis of area, production of organic products and its export in India is a study conducted on the economic analysis of area, production of organic products and its export in India by Sathya and Banumathy (2017). The present study used the secondary data collected from secondary sources. The time series data on area, production, productivity and export of organic products in India, were collected from publication of National Programme of Organic Production (NPOP), APEDA (Agricultural Processed Food Product and Export Development Authority) and The world of organic agriculture statistics and emerging trends FiBL and IFOAM, International Competence Centre for Organic Agriculture (ICCOA), National Centre of Organic Farming (NCOF), reports, journals, periodicals and newspapers etc. Percentage analysis was used for making simple comparisons. The recommendation of the study are that Organic products are grown under a system of agriculture without the use of chemical fertilizers and pesticides with an environmentally and socially responsible approach.

Chapter - 3

Niravu Organic Village Model in Vengeri Panchayath - An Overview

Introduction

Sustainable agriculture and organic farming

Organic farming is one of the several approaches found to meet the objectives of sustainable agriculture. The term „organic „describes those methods which do not pollute the environment, it is concerned with sustainable agriculture. Organic agriculture is a unique production, management system which promotes and enhance agro eco system, health, including biodiversity, biological cycles, and all soil biological activity and is accomplished by using –farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs.

Organic farming - A quick glance

The history of organic farming can be traced back from 1905 onwards; A comprehensive view of history and growth of organic farming is presented in table 1.

Year	Name of scientist	Country	Contribution	Remarks
1905	Albert Howard	Britain/UK	An agricultural testament	Father of modern organic farming
1909	FH King	America	Famers of forty century	World moments for the introduction of new and improved methods
1924	Rudolf steiner	Germany	Biodynamic agriculture	Farmers role in guding
1939	Lord Northbourne	Germany	Look to the land	Holistically and ecologically balanced approach to organic farming
1950	J.I Rodale	US	Sustainable agriculture	Promotion of organic grdening
1962	Rachel Carson	US	Silent spring	Worldwide environmental movement
1975	Masanobu Fukaoka	Japan	The one staw - revolution	Meticulous balance of the farming ecosystem
2000	Sean swezey	US	First organic apple production	Organic farming methods apple and cotton
2006	Michael Pollan	Switzerland	A Natural History of four meals	Books on organic agriculture and sustainable development
2010	Kathleen Merrigan	US	Ecological farming	Sustain and enhance the health of soil, plant, animal, human and planet
2011	Kathleen Merrigan	US	Federal organic	Federal organic food - labeling rules

Table 1: History and Growth of organic farming.

Source: International Federation of Organic Agriculture Movements (2011).

The difference between conventional and organic farming

Conventional farm practices are geared mainly towards technological advances such as improved seed varieties, mechanized intensive soil tillage, large-scale irrigation systems, and mono-cropping. Crop protection and soil improvement farm practices rely heavily on the use of pesticides and synthetic fertilizers. The use of chemicals in crop production leads to higher inputs. However, conventional farm practices make farmers' work much easier during all stages of crop production. While aiming to reach high productivity goals, conventional farmers leave a substantial environmental footprint. For example, excessive irrigation, coupled with the use of chemicals, cause pollutants to penetrate fresh water resources.

On the other hand, organic farm practices rely on sustainable and environmentally friendly farm practices. The use of crop growth regulators, genetically modified organisms, and synthetic pesticides and fertilizers is strictly limited or excluded entirely. Therefore, farmers who utilize organic practices rely on crop rotation, green manure, compost, biological pest control, and mechanical cultivation. Such practices are more labour-intensive for farmers, but the inputs are much lower than in conventional farming.

Managing productivity and profitability in both farming types

While the practices of both conventional and organic farming can be debated, farmers are mostly concerned about the productivity and profitability of each. Farm productivity depends on many factors, including crop characteristics, soil type, weather conditions, and insect pests and diseases, among others. Conventional farming is believed to be more productive than organic. However, higher input costs and lower market price does affect its profitability. A closer look at the yields, organic farming is still less productive than conventional. One reason for this is the fact that organic farming boosts crop growth, while conventional farming eliminates potential crop damages. There are some examples showing organic farming as holding great potential for adequate yields. Research conducted by the Rodale Institute proved that organically grown corn has a yield that is 31% higher than conventionally grown corn during years of drought.

Finally, organic farming has shown to be an efficient practice in spite of typical lower yields. One reason for the efficiency of organic production is the higher market price that organically grown crops can demand. Certified organic products tend to be more expensive for public purchase than their conventional counterparts. The main reason for this significant price difference is the limited supply of organic products available, leading to higher market demand. Because of lower production inputs, higher demand for organic products, and higher prices that can be charged, organic farmers may achieve a comparable amount of efficiency, becoming a strong and capable market competitor to the conventional farmer opponent.

Organic farming in India

India has a glorious history of farming, starting probably from the 6th millennium BC in the Indus Valley, harnessing the annual floods and the subsequent alluvial deposits. The Indus Valley Civilization was founded on sustainable farming practices. Subsequently, our culture and ethos became reflections of the agricultural practices and it became mutually inseparable till recently. Harvest of the main crops is celebrated throughout the country. In Kerala, it went to the extent of identifying the farmland with Mother God or a female. Just like the female has to take rest after delivery, the farm land has also to be given rest for three months after the harvest; tilling is strictly prohibited during this period. Although it may look superstitious, the ecological reason behind this ritual is that tilling during monsoon leads to severe soil erosion and thus, is an unsustainable practice. Therefore, sustainability has been the hallmark of our farming system from time immemorial; growing the time tested, weather suited, traditional crops with or without additional

organic inputs, but deeply interwoven with the ecological systems and climatic conditions.

The once flourished Pokkali cultivation in the coastal districts and the Kaipad farming system in Kannur district are testimonials to man's ingenuity inharnessing the natural events for farming, that too integrated farming, without affecting the natural ecological processes and without even any external inputs. However, the so called modern agriculture-unmindful of the ecosystem principles so revered and practiced for centuries-led to seemingly irrevocable ecological and environmental catastrophes in the country. The Green Revolution essentially replaced the traditional varieties with high-yielding ones. These high yielding varieties now recognized as "high input varieties" needed tonnes of fertilizers, to achieve the target growth. The cropsand varieties alien to the soil attracted new pests and diseases and also outbreaks of existing pests. To combat them, came in huge quantities of pesticides. Input of these "exotic" elements into the traditional farming led to multitude of environmental issues. The microorganisms declined; the soil lost its fertility and vitality; water demand increased and, the time tested traditional varieties disappeared. In short, the century old practices came to a halt. The eternal relationship between the farmer and farm land was lost. More importantly, sustainability of the agriculture systems collapsed, cost of cultivation soared, income of farmers stagnated and, food security and food safety became a daunting challenge. Biodiversity in the agricultural fields has now become a history of the past.

The farmland became silent; devoid of the croak of frogs, chattering of warblers, whistling of Whistling Ducks. The long tubular straw striven nests of the Baya weaver bird hanging on the fronds of palm-a once spectacular sight-have disappeared from most localities. The insectivorous birds such as drongo, bee-eater, even the house sparrow became rare or locally extinct, indicating the collapse of the entire food webs of the farm land. In the forestry sector, fortunately the use of pesticides has been much less. However, the aerial spraying of pesticides in India was first tried in Kerala in 1965 to control the teak defoliators in Konni forest division. It was noted that within 48 hours nearly 162 non-target species of arthropods were knocked down. The mentally and physically retarded and handicapped children in Padri village in Kasergod tell the world in unequivocal terms the tragedies and disasters that aerial spraying of pesticides could inflict on human life. As a result of all these "modern" techniques, the air, water and the soil were polluted; most food grains and farm products were contaminated by pesticides. The runoff from the farm land contaminated the wetlands - rivers, tanks, ponds, reservoirs, lakes and all water bodies- and the life in them. Fishes carried high levels of pesticides and also heavy metals, the latter as a result of the many chemical industries that sprang up to provide chemical fertilizers.

Health hazards became unimaginably high. Incidence of fatal diseases rose. Hospitals with modern amenities came up in the cities as profit making industries. Pharmaceuticals flourished. Food crops became non-attractive, while cash crops became more remunerative. Rice fields have been filled up for non-agricultural activities. The area under cash crops expanded during the last 20 years (16% under rubber alone), while that under food crops plummeted (to just 9% of the total cultivated area). The monoculture of such economically valuable crops led to soil erosion and loss of soil fertility to a great extent. The advent of chemical intensive farming and its prevalence in Kerala for the past 50 years have resulted in the near stagnant levels of productivity of many of these economically important crops such as coconut, cashew, pepper, coffee, tea, cardamom and arecanut. Besides these, many regions in Kerala, like Wayanad started facing acute water scarcity. The State has taken note of it and given priority in the Eleventh Five Year Plan.

Over and above, the economic liberalization and WTO policies added to the woes of the farmers by bringing down the prices of agriculture commodities**.** They are caught in the debt trap owing to the loan taken to meet the high cost of farming, as it demanded more external inputs such as fertilizers, pesticides and water. These led to increasing instances of suicide by farmers. Investment in agriculture has essentially changed from the farmer to the industries supplying input to the farmer, and as a direct consequence, net income for farmers decreased while the industries supporting agriculture in the country flourished. The national policies of opening retail sector to national and multinational companies pose great threat to our food sovereignty and right to safe food. The enhanced "food miles" led to increased carbon emission, further increasing the load of green house gases. The potent danger of introducing Genetically Modified crops, monopoly of seeds by national and multinational corporate bodies could very well be the last straw on the camel's back for the farmers of Kerala.

Many farmers have realized that they are fighting a loosing battle with the "high yield variety - fertilizer-pesticide pack" of Green Revolution. They have also realized that the degradation and disruption of the fragile ecosystems of the "God's owncountry" are the chief culprits for the water scarcity, nutritional insecurity, loss of primary productivity and agrarian crisis being faced by the State. The farmers in Kerala are convinced that the only way is to return to the traditional sustainable ways of cultivation without harming the ecosystem. Thus the organic farming, a system with the broad principle of "live and let live", came up which was recognized nationally and internationally. Organic agriculture is not limited to crop production alone, but encompasses animal husbandry, dairy, fisheries, poultry, piggery, forestry, bee keeping, and also uncultivated biodiversity around. By and large, there is an increasing awareness among the consumers also on the deleterious effects of pesticides and hence, there has been a high demand for organically cultivated food produces. Therefore it has become a solemn responsibility of the Government to encourage organic farming to ensure poison-free food at affordable price to every citizen. There have been demurs and doubts on the practicability of organic farming on the ground that the production would plummet and the country would once again be forced to yet another food crisis. This is quite unfounded. Success stories on high productivity of organic farming are now abundant. The Food and Agriculture Organization reports at the International Conference on Organic Agriculture and Food Security 2007 as follows: "Conversion of global agriculture to organic management, without converting wild lands to agriculture

and using N-fertilizers, would result in a global agricultural supply of 2640 to 4380 kcal/person/day. Sustainable intensification in developing countries through organic practices would increase production by 56 per cent. Organic yields on average are comparable to conventional yields; although yields do decline initially when converting from high-input systems and almost double when Converting from low-input systems. It also has found that organic farms use 33 to 56 per cent less energy per ha than conventional farms. Worldwide, as of now, more than 22.81 million hectares of land area is managed organically and the market of organic food is around $30 billion. It may be noted that Cuba, a country with 42,402 sq. miles of land and with 11.3 million people, is completely organic.

Farming-on its path of evolution

Pesticides have been in use in agriculture since Second World War and from the very beginning there have been concerns about the commercialization of chemical pesticides.

Rachel Carson's, "Silent Spring" published in 1964 brought out the scientific certainties of the impacts of pesticides on environment. Although DDT was banned in the developed world in the 1970s, and its use in the agriculture fields of developing countries later, varieties of toxic pesticides found their way into the farms. The scientific predictions of Rachel Carson became true and the public, especially farmers and scientists, the world over realised the dangers of the farmers and organizations in Andhra Pradesh, Karnataka, Tamil Nadu, Gujarat, Maharashtra, Punjab and Kerala during the same period. The total external dependence of farmers for agriculture inputs had started affecting their economies leading to desperation among farming communities and ultimately to agrarian crisis. As an alternative, to make farming sustainable, Low External Input Sustainable Agriculture (LEISA) thus gained momentum in many places, especially sustainable among small and marginal farmers. The agriculture crisis that began in the late 1990s further strengthened this movement. India is endowed with various types of naturally available organic form of nutrients in different parts of the country and it helps for organic cultivation of crops substantially.

Many individuals and organizations started interacting with farmers to make them understand the problems of the modern agriculture. Thus, from a simple beginning, organic farming later matured to such dimensions as women's empowerment, seed conservation, development of seed banks, value addition and, more importantly, food and nutritional security. It took only 10 - 15 years for this transition and the results are encouraging. Currently there are a number of certified organic farmers in the state, those cultivating cash crops such as spices, tea, and coffee, mainly targeting export market and also noncertified organic farmers who focus on food crops and biodiversity. All of them, whether certified or not, focus clearly on soil health improvement. Kerala also has an accredited organic certifying agency catering to the needs of the farmers. Some of the farming systems such as Pokkali and Kaipad cultivation, cultivation of Jeerakasala and Gandhakasala varieties of paddy in Wayanad and, homestead farming systems all over the state are default organic. Studies have established the economic viability and productivity of homestead farms in the State and elsewhere. Recently the Adat panchayath in Thrissur district has started organic cultivation of rice in an area of 2,500 acres, promoting integrated farming system, which is known as Adat model. Similarly Marappanmoola in Wayanad has another model organic farming system involving hundreds of farmers.

Marketing of organic produce is also being experimented in many places like Organic Bazaar in Thiruvananthapuram, Eco-shops in Thrissur and Kozhikode and, Jaiva Krishi Sevana Kendram in Kannur. Self help groups of women are encouraged to undertake organic farming of vegetables in some panchayats. There is a rich potential for promoting organic farming in Kerala in the light that intensity of inorganic agriculture here is not that severe compared to that in other States in the country. While the national average consumption of fertilizers and pesticides during 2002-2003 was 90 kg/ha and 288 g/ha respectively, it was only 60 kg/ha and 224 g/ha respectively in Kerala. This points to the positive side of agriculture in Kerala in terms of the already low levels of consumption of hazardous chemicals and, therefore, chances of redeeming farmers to organic agriculture are quite high.

Benefits of organic farming

- Makes agriculture more rewarding, sustainable and respectable.
- Sustains soil fertility by preventing the loss of soil and leaching of minerals.
- Protects and enriches biodiversity - micro organisms, soil flora and fauna, plants and animals.
- Requires less water and promotes water conservation.
- Improves and maintains agro ecosystem and natural landscape for sustainable production.
- Depends mostly on renewable on-farm resources.
- Encourages consumption of renewable energy resources-mechanical and other alternate sources of fuel.
- Includes domestic animals as an essential part of organic system which helps maintaining soil fertility and also increases the income of farmers.
- Ensures pollution free water, soil.
- Improves agro-biodiversity (both varieties and crops).
- Protects and enhances traditional knowledge in farming, processing and seed improvement leading to its protection for the future generations.
- Reduces the cost of production through locally suitable methods and inputs.
- Produces adequate quantity of nutritious, wholesome and best quality food and develops a healthy food culture.
- Reduces the food - mileage and, thereby, carbon emission.

The State Government have seized of the importance of organic farming and, realized the health hazards and un-sustainability of chemical farming as it clearly states in its Biodiversity. Strategy and

Action Plan that the state has to have an organic farming policy to protect its rich biodiversity and thus sustain various livelihoods dependent on this precious resource.

"Organic products are grown under a system of agriculture without the use of chemical fertilizers and pesticides with an environmentally and socially responsible approach. India's total area under organic certification is 5.69 million hectares in 2013 - 14 and its global rank is 10th".

Realising the ground realities, the State Department of Agriculture commenced organic farming promotional activities since 2002-03. In the following year, the Department set up a cell for Promotion of Sustainable Agriculture and Organic Farming. It has also launched two brands, namely "Kerala Organic" and "Kerala Naturals" to market organic farm produces. Currently, about 7,000 farmers practice organic farming in the State as per NPOP standards, covering a total area of 5750 ha. But non-certified organic cultivation area, assessments of which have not been done, is expected to be much more than this. "Nava Kerala Mission" is an initiative of Mr. Pinarayi Vijayan led Government of Kerala launched in November 2016. The initiative seeks to address problems faced in four key social sectors, namely, health, education, agriculture and housing, with the help and involvement of local self-governments. The Mission was officially launched by P. Sathasivam, Governor of Kerala, in a meeting held in Thiruvananthapuram on November 10, 2016. Turning a new leaf in local development with a renewed thrust on social justice, the State government launched the Nava Kerala Mission. This envisages a clean state by taking up various waste management programmes. It is also planned to implement schemes for agriculture development and promotion of organic farming.

Niravu organic village - a profile

It was in November 1, 2006 that the Niravu Residents Association, Vengeri in Kozhikode city corporation decided to actively take to organic farming and ensure that every member household had a backyard vegetable garden for them. Niravu had as many as 101 residents then, when forum came across a scarcity of good and indigenous vegetable seeds, its members decided to collect vegetable seeds from different parts of the state.

Former chief Minister V.S. Achuthanandan unveiled the state's organic farming policy in a function held at Vengeri village on May 9, 2010. It seems to be Vengeri is the right place to unveiling the state's organic farming policy, because for the past four years, no chemical fertilizers or pesticides has been used at Vengeri. More importantly, all residential and vacant plots within this ward grow vegetable and fruit-bearing trees. Before 2006, Vengeri's story was like that of other places in the State. Dreams of Public Service Commission recruitment and jobs in the Gulf were foremost on every youth's mind and farming, the traditional occupation of the people, was suffering.

When K.C. Anilkumar was elected as an independent from the ward in 2005, a socio-economic survey of the 1,824 houses in Vengeri on the lines of the Kerala Studies conducted by the Kerala Sasthra Sahithya Parishad (KSSP), under the guidance of Green activist Professor Sobhindran, winner of the National Vrikshamithra Award, Sr (Dr) Ancilla, Principal of the Providence Women's College, and Corporation Councillor K. C. Anil Kumar. Detected five cases of cancer in women in the locality who neither smoked nor consumed alcohol. Having come to the conclusion that the malady was caused by the consumption of pesticides-socked vegetables and fruits brought from mainly outside the State, the NIRAVU fraternity decided to transform Vengeri into a Zero pesticides organic farming village.

Niravu organic village - a success story

The faculty of the Pathology Department at the Kozhikode medical college told Mr. Anil Kumar that consumption of vegetables grown using fertilizers and pesticides could be responsible. He then rallied support for a campaign to make the ward self-sufficient in food and use of only organic manure to grow the crops. it was decided to raise paddy on 10 acres as a community effort. Agriculture officials said the effort was bound to fail as seeds, labour and organic manure were scarce and the youth would not cooperate. We got „mundakan' seeds from an old Vengeri farmer. Sixty-one houses owned cows here but the cow dung provided by just 20 households was sufficient for manure. The Principal of Providence College asked for 100 students, 175 NSS members from the college volunteered. Soon, the 12 residents' associations and the 36 Kudumbasree units in the ward joined in. In 2008, a large-scale vegetable farming initiative began on 12.5 acres, armed with a government subsidy of Rs. 50,000. The vegetables harvested that year included spinach, okra, bitter-gourd, snake-gourd, pumpkin, cucumber and brinjal. We earned Rs. 1.37 lakh and spent only Rs. 33,000 from the subsidy. More importantly, we learnt about optimum water use, using the right manure and warding away pests. In 2009, a "Thousand Kitchen Gardens" project was launched so that every household had a vegetable farm. Today, they grow all the vegetables we need.

In 2009 when agitations against BT brinjal erupted across the country, the residential forum decided to respond to the development in a creative way. We decided to get ready as many as 1 lakh seedlings of this variety of brinjal and distribute them among people from different parts of the State. A variety of brinjal was among four unique varieties of vegetables we collected as part of an aggressive drive to gather as many good vegetable seeds as possible. All the 101 residents cooperated fully with the drive and more than 1 lakh saplings was prepared. The then Agriculture Minister(Kerala state) had even visited the place to appreciate the initiative. It was during this period that KAU Director of Research T.R. Gopalakrishnan visited Niravu Vengeri to witness their agricultural initiative. He collected the seeds of this brinjal and handed them over to the Olericulture Department of KAU for a study of the variety. It was following this that Dr. Indira undertook a study on this variety of brinjal. The Kerala Agricultural University had recently granted a certificate of merit stating that the "Vengeri Brinjal" was high yielding, relatively tasty and suitable for backyard vegetable gardens. Saplings of "Vengeri brinjal", an indigenous variety of brinjal popularised by the residential forum "Niravu Vengeri", will soon be available commercially with the Centre for Environment and Develop-

ment, an autonomous research and development body under the Ministry of Environment and Forests, deciding to tissue culture and make it widely available to the public.

Why niravu is named as organic village?

The members of Niravu, a collective formed by 101 households in Vengeri Near Kozhikode district in Kerala, is spreading their mission-"connecting farmers" through their new project "NIRAVU ORGANIC VILLAGE, KOZHIKODE", which, they claim, is sustainable and can spark interest in agriculture. The zero-budget plastic waste management programme conceived and successfully launched by the Niravu Residents Association at Vengeri here is now being extended to many residential association and also to Calicut Airpot and Indian Institute of Management (IIM) Kozhikode. Our mission is, Niravu model would be extended to entire Kerala in the next five years with the help of school students, youngsters, and farmers. A „light revolution" is slowly emerging in Kozhikode. As in many other groundbreaking, eco- friendly initiatives, we are the epicentre of this pioneering initiative too. It all began as part of an energy conservation project, "Oorjasree" (assembling LED lights).

Vision and mission of niravu

- To inculcate the culture of Farming in the new generation
- To protect the environment from pollution and toxic fertilization
- Production of non- poisonous food grains and vegetables through organic farming
- Energy conservation through different means for the future generation and the earth
- To bring back the tradition of farming.

Uniqueness of niravu organic village model

NIRAVU stands out among neighborhood residents associations in several respects. The entrance gates of NIRAVU households are always kept open and their backyards never walled up and shuttered. Families interact freely and move from one compound to another unhindered by walls and gates. That agriculture has sparked a cultural renaissance in Vengeri is another aspect the residents are proud of. We have organised a "Chakka Mahotsavam" in March 2009 with 63 food items produced from jackfruit, followed by an exhibition in November showcasing 150 food items, artefacts and implements made from the coconut tree. Once a year, all the families shut their kitchens and come out and join in a cook-in get-together. NIRAVU members believe that keeping their surroundings clean is important for their general welfare. The head of each family is held responsible for the upkeep of his/her surroundings and the stretch of road in front of the house. They process their household garbage into manure and recycle whatever they can. They gather the unrecyclable wastes for delivery to the Corporation dumps once in three months. The cumulative impact is visible in having a very clean Vengeri. In 2009 when agitations against BT brinjal erupted across the country, the residential forum decided to respond to the development in a creative way. We decided to get ready as many as 1 lakh seedlings of this variety of brinjal and distribute them among people from different parts of the State. A variety of brinjal was among four unique varieties of vegetables we collected as part of an aggressive drive to gather as many good vegetable seeds as possible. All the 101 residents cooperated fully with the drive and more than 1 lakh saplings was prepared. The then Agriculture Minister (Kerala state) had even visited the place to appreciate the initiative. It was during this period that KAU Director of Research T.R. Gopalakrishnan visited Niravu Vengeri to witness their agricultural initiative. He collected the seeds of this brinjal and handed them over to the Olericulture Department of KAU for a study of the variety. It was following this that Dr. Indira undertook a study on this variety of brinjal. The Kerala Agricultural University had recently granted a certificate of merit stating that the "Vengeri Brinjal" was high yielding, relatively tasty and suitable for backyard vegetable gardens. Saplings of "Vengeri brinjal", an indigenous variety of brinjal popularised by the residential forum "Niravu Vengeri", will soon be available commercially with the Centre for Environment and Development, an autonomous research and development body under the Ministry of Environment and Forests, deciding to tissue culture and make it widely available to the public.

Achievements and reorganizations of niravu organic village

- The foray into organic farming at Vengeri in Kozhikode was yet another achievement of Niravu residential forum, which had received the honour of being the first organic village in the state in the year 2008. Agricultural Minister Sri. Mullakkara Ratnakaran had received the approval from the state authorities.
- The recognition from the State Department of Environment and Climate Change (DECC) in the form of Rs.50,000 for the year 2013 and Rs.90000 for the year 2014 as grant for the implementation of an organic vegetable farming project among the member residents of the forum.

An indigenous variety of brinjal popularised by the residential forum, "Niravu Vengeri". here has received a certificate of merit from the Kerala Agriculture University (KAU) for being relatively tasty, high yielding and above all suitable for backyard vegetable gardens. According to a study conducted by P. Indira, Professor of Horticulture, Olericulture Department of KAU during 2013, this variety now known as "Vengeri brinjal" has an average length of 44 cm and 12.5 cm thickness. The brinjal plant, which is taller than other varieties. The Pesticide Residue Research and Analytical Laboratory under the College of Agriculture, Vellayanai, Thiruvananthapuram, has given a zero-pesticide certificate to the vegetable samples collected from the vegetable gardens of Niravu Residential Forum at Vengeri in Kozhikode. Researchers from the lab had randomly collected samples of seven varieties of vegetables from seven of the 101 residents of the forum for testing their pesticide content. The principal investigator of the lab has certified that no residues of pesticides were detected in any of the samples collected from the forum. Researchers had directly collected samples of bindi (lady's finger), baby tomato, ivy gourd, tomato, cluster beans, brinjal cowpea, and green chilly for the test. Though it was an expensive test costing over Rs.6,000 for each samples, the laboratory

authorities completed the test for free-of-cost for the forum in view of its initiative to promote organic vegetable cultivation.

Organic certification

The most important step towards organic farming taken by the government was to draw a regulatory frame work. It is true that the initiatives by the government to introduce organic farming by laying down regulations came belatedly as many countries have already done this kind of basic work decades ago. The implementation of NPOP is ensured by the formulation of the National Accreditation policy and programme (NAPP). Kerala agricultural university, has certified that the vegetables grown in all the households of Niravu residence are 100 percentage pure, chemical free and organic. The Pesticide Residue Research and Analytical Laboratory under the College of Agriculture, Vellayanai, Thiruvananthapuram, has given a zero-pesticide certificate to the vegetable samples collected from the vegetable gardens of Niravu Residential Forum at Vengeri in Kozhikode. Researchers from the lab had randomly collected samples of seven varieties of vegetables from seven of the 101 residents of the forum for testing their pesticide content. The principal investigator of the lab has certified that no residues of pesticides were detected in any of the samples collected from the forum. Researchers had directly collected samples of bindi (lady's finger), baby tomato, ivy gourd, tomato, cluster beans, brinjal cowpea, and green chilly for the test. Though it was an expensive test costing over Rs.6,000 for each samples, the laboratory authorities completed the test for free-of-cost for the forum in view of its initiative to promote organic vegetable culture.

Chapter - 4
Analysis and Suggestions

The unsustainability of modern agricultural practices has led farming communities, the World over to look for alternatives. The majority of these alternatives indicate a return to traditional, eco-friendly practices; organic farming is one among them. Eco-friendly (organic farming) farming is a farming of integration of biological, cultural, and natural inputs including integrated disease and pest management practices. Organic farming is widely followed not only in India but also in other parts of the World as it results in protecting soil fertility, increase soil nutrient contents and healthier products when compared to inorganic farming system. The side-effects of the modern agricultural chemicals and machines raise serious questions about the overall benefits of the new technology. Chemical fertilisers and pesticides pollute our air and water. Agricultural chemicals, including hormones and antibiotics leave residue in food that may cause cancer and genetic damage.

Various intervention strategies were adopted by Government to provide a solution for the existing problems in agriculture. One of such strategy is Haritha Keralam Mission by Kerala Government, and the mission aims to solve problems in sanitation, preserving water sources, agriculture development, and promotion of organic farming in Kerala. Niravu Organic Village is a Non-Governmental Organisation (NGO) in Vengeri Panchayath of Kozhikode. The study was carried out among 60members of Niravu residence association in Vengeri Panchayath, Kozhikode, and the data was collected through an extensive survey with the help of structured interview schedule. The aim of NIRAVU ORGANIC VILLAGE is to spread their mission through - "connecting farmers" by which, they claim that sustainable agriculture and a viable community can be raised up.

The analysis is structured in the following pattern:

- Socio-economic profile of sample respondents.
- Niravu Organic village Model–An overview.
- Role of Niravu in organic cultivation
- Constraints faced by the respondents.
- Suggestions and recommendation.

Socio-economic profile of respondents

The socio-economic profiles of the respondents exert a direct influence of their behaviour particularly in ORGANIC farming. Personal characteristics of the respondents have very significant role to lay in expressing and giving the responses about research problem in the field of farming. Profile of the respondents varies in accordance with the demographic, geographic, economic, cultural and social changes.

The socio-economic profile of the respondents includes the data regarding age, gender, educational status, income status, family type, income from agriculture, monthly average income, income spent on food and health etc. The profiles of sixty respondents are analysed here in Table 2.

Table 2 shows that, age of the respondents were classified into four major categories. Majority of respondents were belonging to the age groups viz., 30 - 50 years (35 percent) and 50 - 70 years (47 percent). The trend indicates that majority of the sample respondents are middle aged. The Table indicates that pensioners and old aged were interested in farming practices. But same as that of the old age people, younger generation are also in the path of farming. It can be inferred that in case of Niravu, the new generation is also interested to do farming. When they realised the relevance of homestead organic farming, both new generation and old age members started the practice of farming.

Regarding the gender wise interest in organic farming, both male and female are interested in farming. It was noticed that male dominance is more in the field of agriculture. However, women farmers continued farming with the support of their family members. Sample male respondents were having the practice of farming in their farm field were as female respondents doing organic farming in their kitchen garden.

Educational status shows that only 10 percent of the members were illiterate, thirty seven percent of members are having SSLC as their qualification, twenty eight percentage members are having plus two level of qualification, and rest of the 20 percent respondents are graduates. A very small percent of the respondents were post graduates. In general almost all the members are educated; it is a good sign that all the educated people are interested in farming and are practicing it in their farm field.

Sl. no	Particulars	No. of respondents	Percentage
	Age (in years)		
1	Less than 30	1	2
2	30 - 50	21	35
3	50 - 70	28	47
4	70 - 90	10	16
	Total	60	100
	Gender		
1	Male	34	57
2	Female	26	43
	Total	60	100
	Educational status		
1	Illiterate	6	10
2	SSLC	22	37
3	PLUS TWO	17	28
4	UG	12	20
5	PG	3	5
	Total	60	100
	Occupational status		
1	Agriculture	14	23
2	Business	6	10
3	Ex - service and pensioner	19	32
4	Govt employee	12	200
5	Others	9	15
	Total	60	100
	Income status		
1	APL	41	68
2	BPL	19	32
	Total	60	100
	Family status		
1	Nuclear	43	72
2	Joint	17	28
	Total	60	100

Table 2: Socio economic profile of respondents.

Source: Primary data Note: Govt - Government
APL - Above poverty line BPL - Below poverty line.

Even though the respondents are scattered in their field of primary occupation they are having same secondary occupational practice. The major source of income for sample respondents is agriculture. Now after the implementation of Niravu organic village programme an additional source of income is received from Secondary occupation; agriculture. Twenty three percentages of the sample respondents in "Niravu" practices agriculture as their primary occupation. Retried pensioners show the largest percentage of the sample (27 percentages), ten percentages of the respondents are in business field. Even though 60 respondents are different in their primary occupation, their secondary occupation remains the same. Others category include, teacher, carpenter, photographer, bank collection agent, etc.

More than half of the total respondents are Above Poverty Line (APL) and rest are Below Poverty Line (BPL). Thus it can be inferred that most of the members are economically stable.

Table 3 indicates that thirty four per cent of the sample respondents are earning monthly income in between Rs. 5000 and Rs.10000 and thirty two percent earn monthly income between Rs.10000- Rs. 25000. Almost forty five per cent respondents monthly spent Rs.2500 to Rs. 5000 money for food and 42 percent of respondents spent their monthly income Rs. 1000 to Rs. 2500 for food expense. The Table also shows the data of monthly expenses on health. The respondents opined that the consumption of organic vegetables grown in their own residence, not many health issues was reported. Lifestyle diseases are minimal and only regular checkups were done.

Niravu organic village model - an over view

Health hazards became unimaginably high, Incidence of fatal diseases rose. Hospitals with modern amenities came up in the cities as profit making industries. Pharmaceuticals flourished. Food crops became non-attractive, while cash crops became more remunerative. It was in November1,2006 that the Niravu Residents Association, Vengeri in Kozhikode city corporation decided to actively take to organic farming and ensure that every member household had a backyard vegetable garden for them. In 2009, a "Thousand Kitchen Gardens" project was launched, so that every household had a vegetable farm. Today, they are capable to satisfy their consumption needs. The organic farming programme of Niravu conceived and successfully launched by the Niravu Residents Association at Vengeri and now their activities are extended to many residential association.

The effect of organic farming policy among the respondents can be analysed by looking into area of uncultivated land before and after, area under cultivation in 2006 - 07, area under organic cultivation in 2016-17, cropping pattern, cropping system etc. Lack of time, land, financial assistance etc. was the reasons pulling back the respondents from farming in the initial stage.

Cropping pattern of the respondents

The cropping pattern means a proportion of area under various crops at a point of time in a unit area. It refers to the yearly sequence and spatial arrangement of crops or of crops and fallow in a particular land area; cropping system refers to cropping pattern as well as its interaction with resources; technology, environment etc.

Table 4 shows that the major crops grown by the members of Niravu residence are vegetables, banana and paddy. Fifty percent of respondents were cultivating vegetables. The vegetables cultivated by the respondents are bhindi, brinjal, snake gourd, bitter gourd, little gourd, tomato; curry leaves, pumpkin and ash gourd. Different varieties of bananas like nendran, poovan, kathali, robusta, njalipovan etc. Eight of the total respondents were cultivating banana in their field and only one respondent were having organic paddy cultivation among the 60 respondents. The sample respondents practiced mixed type of farming is mostly practiced by the respondents. Except potato and onion, all other vegetables are grown by the respondents in Niravu.

Average monthly Income	No. of respondent	Percentage	Avg income spent on food	No. of respondents	Percentage	Avg income spent on medicine	No. of responders	Percentage
5000 - 10000	20	34	Less than 1000	4	7	50 - 100	26	43
10000 - 25000	19	32	1000 - 2500	25	42	100 - 250	17	28
25000 - 50000	14	23	2500 - 5000	27	45	250 - 500	6	10
50000 - 100000	6	10	5000 - 10000	3	5	500 - 1000	4	7
More than 100000	1	1	10000	1	1	ESI	7	12
Total	60	100	Total	60	100	Total	60	100

Table 3: Monthly average income and expenditure on food and health.

Source: Primary data. Note: *ESI - Employment staff insurance.

Sl. No	Crops	No. of respondents
1	Vegetables	51
2	Banana	8
3	Paddy	1

Table 4: Cropping pattern of respondents.

Source: Primary data.

Area under cultivation

Area under cultivation means land, under which cultivation takes place. Table 5 depicts the status of cultivated and uncultivated land of respondents before and after the Organic Village Model and the details are as follows.

Sl. no	Uncultivated land in 2006 -07 (in cent)	No. of respondents	Cultivated land in 2006-07 (in cent)	No. of respondents
1	Nil	47	Nil	2(4%)
2	1 - 3 cent	8	1 - 10 cent	46(77%)
3	3 - 5 cent	3	10 - 30 cent	8(13%)
4	5 - 10 cent	1	30 - 60 cent	1(2%)
5	Less than 15 cent	1	60 cent - 1 acre	2(4%)

Table 5: Area under cultivation.

Source: primary data.

Note: Figures in parenthesis represents percentage to total.

Table 5 indicates that before the implementation of organic village model in Niravu, 47 respondents of the total respondents were not practicing any type of cultivation practices. After adoption of Niravu organic village programme in 2006 the number of members with uncultivated land came down to two. Later in 2016-17 none of the respondents are having uncultivated land.

Area under cultivation in 2006-07 and area under cultivation in 2016-17

Area under cultivation in 2006-07 and 2016-17 shows a detailed description about the changes made in the area under cultivation.

Table 6 indicates that, before the introduction of organic farming programme in Niravu residence, a large percent of the members were not having the habit of farming. But later the result the study made by the Pathology and Oncology department of Kozhikode medical college in collaboration with Niravu residence association

Sl. No	Area under cultivation	No. of respondents before (2006-07)	No. of respondents after (2016-17)
1	Nil	2	-
2	1 – 10 cent	46	31
3	10 – 30 cent	8	15
4	30 – 60 cent	1	11
5	60 cent - 1.5 acre	2	3

Table 6: Area under cultivation in 2006-07 and area under cultivation in 2016-17.

Source: Primary data.

Vengeri in 2006 states that, a large percentage of women in Vengeri panchayath were suffering from the most dangerous and non curative disease cancer. The reasons stated by the researchers were the pesticide socked vegetables from outside state. This made the respondents to start organic farming in their backyards. Now all the members of Niravu (121) are having organic farming and they do farming with passion.

Reason to start the culture of organic farming

There were many reasons for the respondents to restart the traditional organic farming. Most of the reasons given by respondents to start organic farming were listed in the following table.

Reason to restart organic farming	No. of respondents	Percentage
Consciousness about health	40	68
Save money	4	6
Due to hike in vegetable price	5	8
Use leisure time	5	8
Traditionally farmer	6	10

Table 7: Reason to start the culture of organic farming.

Source of data: primary data.

Table 7 obvious that, forty out of the total respondents (68% the data proves) started the traditional farming in their backyards because of, consciousness on health. But now they are practicing farming as their passion. Only ten percent of the respondents were traditional farmers, now the ten traditional farmers plus all the other respondents are organic farmers.

Irrigation methods practiced by Niravu respondents

Irrigation is the process by which controlled amount of water is supplied to the farm field at regular interval of time.

Sl. No	Irrigation method	No. of respondents
1	Well	39(65%)
2	Pipe connection	15(25%)
3	Well and pipe connection	6(10%)

Table 8: Irrigation methods practiced by Niravu respondents.

Source: Primary data.

Table 8 obvious that, most of the respondent farmers have their own water source in their residence. Well is their major source for irrigation. Scarcity of water is not a problem for them as it is a lower costal area. Two years back they suffered from scarcity problem, but now they have rain water harvesting system in all the houses of residence.

Sl. No	Time spent	No. of respondents
1	Full day	3(5%)
2	Half day	3(5%)
3	3 - 5 hrs	34(57%)
4	As and when time permits	20(33%)

Table 9: Daily time spent by respondents for farming.

This table shows the time spent by the respondents in their farm field. Source: Primary data.

Table 9 elucidates that most of the respondents spent 3-5 hrs in a day in the farm field itself. Some of the respondents practice farming operations as and when time permits. The respondents opined that only watering is to be done daily.

Regarding purchase of inputs and seed

The inputs for farming operation include seeds, fertilizers, machineries, etc.

Sl. No	Purchase of inputs and seeds	No. of respondents
1	KAU	14(23%)
2	Govt institutions	6(10%)
3	Seed bank of residence	40(67%)

Table 10: Details of purchase of inputs and seed.

Source: Primary data

Table 10 obvious that, the respondents purchase most of the inputs like seeds, bio- fertilizers, Neem extract, tobacco extract, and Jeevamrithi from their Krishipura. Only a small percent of the members purchase the seeds from outside sources. The respondents collect some of inputs which are not in their krishipura from Kerala Agriculture University and government institutions

Fertilizers applied and pest control measures used

The Niravu residents only apply organic fertilisers to the crops. Since they practice organic farming the respondents make some fertilisers and pesticides in their home itself.

Table 11 shows that, Organic farming is fully supported by the use of natural methods. The respondents mainly use organic fertilizers like cow dung (20respondents) Green manure (19respondents) biogas slurry (14 respondents). Ash and vermin compost are also used by a small number of respondents. Natural pest control methods used by respondents include Neem extract (17respondents) Tobacco extract (17 respondents) pest trap, light trap and inter cropping methods.

Sl. No	Fertilizers applied	No. of respondents	Pest control methods	No. of respondents
1	Cow dung	20	Neem extract	17
2	Green manure	19	Pest trap	14
3	Biogas slurry	14	Inter cropping	12
4	Ash	4	Tobacco extract	17
5	Vermin compost	3	-	-

Table 11: The fertilizers applied and pest control measures used.

Source: Primary data.

Homemade fertilizers

The major homemade fertilizers used by Niravu households are JEEVAMRITHI, Tobacco extraxt, Neem extract, vermi compost etc.

Sl. no	Homemade fertilizers
1	Jeevamrithi (A mixture ofurine of cow 1litre + 1kg cow dung + 200 gm jaggeri +200 gm green gram)
2	Vermi compost
3	Neem extract
4	Tobacco extract

Table 12: Details of homemade fertilizers.

Source: Primary data.

Table 12 elucidates that homemade fertilizers like JEEVAMRITHI, Tobacco extract, Neem extract, biogas slurry, vermin compost mix etc. are the only fertilizers applied by them. The officials and scientists from Kerala agriculture university has scientifically checked in there laboratory and proved that the vegetables and fruits grown in Niravu residence is purely organic; They provided the certificate for organic and later in 2010 they were named as the first Organic village in the state. Only one of the respondents have livestock in their residence, and others share the green manures as and when required.

Sl. No	Person who take care of farming	No. of respondents
1	Head of the family	5
2	Homemaker	3
3	Grandparents	7
4	Children	4
5	All the members of family	36
6	Grandparents and children	5

Table 13: Details regarding person who take care farming.

Source: Primary data.

Table 13 indicates that, all the respondents are interested to do integrated framing system. It inferred from the table all family members of the respondents are interested to do farming.

Role of niravu organic village model in niravu residence organic farming

Role of Niravu organic village model among the members of Niravu in organic farming can be analysed by looking into the change in intensity of farming, cost of cultivation, production, productivity rate, awareness level, benefits received etc.

Intensity of farming of respondents before and after

The intensity on farming boost up as it is practiced, when farming is practiced with a passion, the intensity to do farming will be budding.

Table 14 indicates that Out of the 60 respondents only 8 were traditionally farmers. Fifty two of the total sample respondents have started this new culture of farming only because of organic village project, also the awareness made by the officials of residence increased the intensity of farming.

Sl. No	Intensity of respondents	No. of respondents
1	Remains same	8
2	Increased	52

Table 14: Details regarding intensity of farming of respondents before and after.

Source: Primary data.

Cost of cultivation, production and productivity rate after implementation of organic farming programme

Cost of cultivation, production rate and productivity are the measure of the changes that had happened to the respondents in economic terms.

Cost of cultivation	No. of respondents	Rate of production	No. of respondents	Productivity rate	No. of respondents
No change	10	No change	8	No change	-
Increased	-	Doubled	44	Increased	60
Decreased	50	Tripled	8	Decreased	-

Table 15: Details regarding cost of cultivation, production and productivity rate after implementation of organic farming programme.

Source: Primary data.

Table 15 indicates that, by the implementation of the organic village project made an immense change in the cost of cultivation, production and productivity. The respondents opined that Cost of cultivation has came down due to the use of homemade organic fertilizers like jeevamrithi, vermin compost, neem and tobacco extracts etc. rate has been increased in a sudden rate. Production rate has been doubled for 44 respondents and tripled for 8 of the respondents, and for 8 of the respondents production rate remains same. Productivity rate has been increased for all the respondents. The respondents opined that organic cultivation method is not too much costly as all others think and they got a double advantage of increased production rate with minimal cost.

Awareness index on organic farming

The awareness indices is calculated to analysis the extent to which the organic village model had made awareness among the respondents.

Particulars	Score	Index	Rank
Awareness on farming	171	95	3
Awareness on organic farming	174	96.6	1
Frequency of market visit	73	40.5	6
Environmental pollution	72	40	7
Health condition	166	92.2	5
Soil fertility	168	93.3	4
Output from farm field	172	95.5	2

Table 16: Awareness index on organic farming.

Source: Primary data.

Table 16 shows that awareness on organic farming along the years of the respondents has increased. Three point scale using awareness Increased, decreased and remains same. Increased was given 3 marks, remains same was given 2 mark and decreased was given 1 mark.

Awareness on the field of farming and organic farming has been increased enormously. The respondents opined that production and productivity has been also increased, frequency of life style disease has been decreased and the fertility of soil has been increased.

Benefit of organic farming

As a member of Niravu and practicing organic farming they have benefited in many ways like, environmental benefits, social benefits and enhancement in health.

Particulars	Score	Index	Rank
Enhance healthy body system	177	98.3	1
Good robust harvest	140	77.7	3
Land sustainability	98	54.4	5
Little or no chemicals on food	164	91.1	2
Soil preservation	104	57.7	4

Table 17: Benefit of organic farming.

Source: Primary data.

Table 17 indicates that, 10 years of successful model of organic farming is practiced by the respondents. The respondents opined that organic farming has enhanced health condition of farmers and improved the soil fertility.

Constraints faced by respondents

The constraints faced by the respondents in the initial stage of organic farming and the problems the respondents had faced in the path of success of organic farming. Since Niravu is a residences association there was to many problems through which the respondents have to gone. Almost ninety percent of both members of the respondents were working so lack of time was the major constraint the members faced, to overcome this problem they jointly found a solution to practice farming in the holidays and also to find some time in morning and evening after their daily works.

Sl. no	Constraints	No. of respondent
1	Land	13(22%)
2	Fund	8(13%)
3	Time availability	39(65%)
4	Lack of labour availability	-

Table 18: Constraints in initial stage of implementation of project.

Source: Primary data.

Table 18 indicates that, Lack of time was the constraint faced by the thirty nine of the total respondents, but when they realised the importance of farming the found time for farming. In the initial stage thirteen respondents faced the problem of lack of land for cultivation, but later they started group farming and also practicing farming operation on land bought for lease.

Particulars	Score	Index	Rank
Cultivation is costly	106	58.8	2
Lack of time	130	72.2	1
Insufficient fund	65	36.1	4
Maintenance from weed	73	40.5	3

Table 19: Perceived constraints Index.

Source: Primary data.

Table 19 Elucidates that, major constraint faced by the respondents was lack of time or to find some time to do farming, but later in 2006 realising the problems. They found time on the holidays and started preparing land and then as and when time permits they did growing crops, hence slowly they became the first organic village in the state. Cost of cultivation in case of organic farming was another constraint, insufficiency of fund was another constraint faced by the respondents.

Details of training attended on organic farming

The members were given training programme on farming and importance of organic farming. The major institutions under which the members attended training were Panchayath, KVK and NABARD.

Sl. No	Training programme on	Funding agency	No. of respondents
1	Organic farming policy	Panchayath	15
2	Framing techniques and scope of organic farming	KVK	25
3	Role of organic farming in this century	NABARD	18
Total			58(97%)

Table 20: Details of training attended on organic farming.

Source: Primary data.

Table 20 indicates that, Ninety seven percent of the respondents have undergone training classes and seminars on organic farming. They opined that respondents were given all the information regarding farming, like the need for farming its benefits, its impact on human life and surrounding. The classes and implementation of organic village project have made great changes in their social, economic and financial areas of life.

Suggestions and Recommendations

The study on the organic village model of Niravu reveals that, farming is not as complicated as we think; Interest in organic farming and organic products has been rising steadily over the past several years. Although organic farming only accounts for barely 1% of the global agricultural land, this practice is becoming more and more popular among farmers. Conventional farm practices are geared mainly towards technological advances such as improved seed varieties, mechanized intensive soil tillage, large-scale irrigation systems, and mono-cropping. Crop protection and soil improvement farm practices rely heavily on the use of pesticides and synthetic fertilizers. The use of chemicals in crop production leads to higher inputs. However, conventional farm practices make farmers' work much easier during all stages of crop production.

While aiming to reach high productivity goals, conventional farmers leave a substantial environmental footprint. For example, excessive irrigation, coupled with the use of chemicals, cause pollutants to penetrate fresh water resources. On the other hand, organic farm practices rely on sustainable and environmentally friendly farm practices. The use of crop growth regulators, genetically modified organisms, and synthetic pesticides and fertilizers is strictly limited or excluded entirely. Therefore, farmers who utilize organic practices rely on crop rotation, green manure, compost, biological pest control, and mechanical cultivation. Such practices are more labour-intensive for farmers, but the inputs are much lower than in conventional farming.

The suggestions came out from the survey are

- Students and youth should be trained to do farming without any hesitation in the educational institutions.
- Government is now implementing many schemes and programmes on organic farming, in reality only implementation happens, the implementation should be made into a practice.
- Training and seminars should be conducted everywhere, so

the public will get more awareness about importance of organic farming

- Timely funds were not available; funds should be made available in time.

Recommendations

The recommendations based on the study are

- To inculcate the culture of Farming in the new generation we should restart farming in backyards, government should take initiatives for implementation of homestead framing in all households in our state.
- To protect the environment from pollution and toxic fertilization, farming is necessary
- Production of non- poisonous food grains and vegetables can be made through organic farming
- Energy conservation through different means for the future generation and the earth are possible.
- Nava Kerala mission should not be a scheme in papers but in farm fields.
- To bring back the tradition of farming.

Conclusion

Adverse effects of modern agriculture practices not only the farm but also on the health of all living things and thus on the environment have been well documented all over the world. Application of technology, particularly in terms of the use of chemical fertilizers and pesticides all around us has persuaded people to think aloud. Their negative effects on the environments are manifested through soil erosion, water shortages, soil contamination, genetic erosion, etc. Organic farming is the best alternative to avoid the ill effects of chemical farming. Sustainable agriculture is an integrated system of plant and animal production practices having a site-specific application that over the long term.

The implementation of organic farming policy in Niravu residence association in 2006 is a still continuing success story for Vengeri panchayath and also for entire Kozhikode district. When we study the impact of Niravu organic village programme in Niravu and also in its surrounding, we will find that, the members are now aware about the importance of organic farming and its need. The intensity of farming practice has increased among the respondents Health of members has improved. Pollution rate came down; no waste is burnt or thrown to the backyard. Every household have a kitchen garden, with organic farming. Change in attitude, awareness about farming. Psychological and physiological factors of members improved, Fertility of soil increased; stated with the presence of earthworms in soil.

Chapter - 5

Summary of Findings, Suggestions and Conclusion

This chapter contains the resume of project report in three parts, i.e. (i) summary of findings, (ii) suggestions and (iii) conclusion. The salient features of the findings of the study are listed below.

Summary of Findings

Profile of the respondents

- The trend indicates that majority of the sample farmers are above the middle age. In Niravu both younger generation and old age members are interested in farming.
- More than half of the sample was male and nearly half of the female respondents.
- In general almost all the members are educated; it is a good sign that all the educated people are interested in farming and are practicing it in their farm field.
- Even though the members are scattered in their field of primary occupation, the major source of income for sample members is agriculture. Additional source of income to the respondents are received from Secondary occupation agriculture.
- Retried pensioners show the largest percentage of the sample (27%) and now they are in the field of organic farming.
- More than half of the respondents are above poverty line, and rest of the percentage are below poverty line.
- A large percentage (34%) of the sample respondents earn monthly 5000 - 10000 (Rs.) and 32 percent earn 10000 - 25000 (Rs.).
- Due to the intake of organic vegetables grown in their own residence, there reports only few health issues or hospital cases.
- Before the implementation of organic farming policy out of the 60 respondents 47 were not practicing any type of cultivation.
- After the implementation of the programme only 4 percentages of the respondents were not having farm area or cultivation practice.
- Most of the respondents have 1 – 10 cent land (77%). Only 2 of the respondents own land in between 60 cent - 1 acre.
- Now all the members (121) are having backyard farming (organic farming) and they do farming as a passion.
- About 51 respondents out of the 60 were cultivating vegetables, 8 respondents were cultivating banana and only one of the respondents were having organic paddy cultivation.
- They have restarted the culture of farming only because of health consciousness (68% the data proves) 40 respondents out of the 60.
- Out of the 60 respondents 50percent of respondents started organic farming because of fear on health,
- And the next half started to reduce the intake of pesticide and chemical socked vegetables from outside Kerala.
- Well is the major source of irrigation for more than 50 percentages

- Training classes and seminars on organic farming were attended by 97 percent of the respondents.
- Lack of time was the constraint faced by the 39 respondents.
- In the initial stage 13respondents faced the problem of lack of land for cultivation.
- Most of the respondents (34) spent their 3 - 5 hrs in a day in the farm field.
- Only watering is to be done daily.
- The residence has their own Krishipura.
- They purchase most of the inputs (seeds, bio-fertilizers, Neem extract, tobacco extract, and Jeevamrithi) from their Krishipura.
- Respondents mainly use cow dung (20) Green manure (19) biogas slurry (14). Ash and vermin compost.
- Production rate has been doubled for 44 respondents and tripled for 8 of the respondents and for 8 of the respondents production rate remains same.
- Productivity rate has been increased for all the respondents.
- Cost of cultivation increased the production also doubled or tripled.
- Homemade fertilizers like JEEVAMRITHI, Tobacco extract, Neem extract, biogas slurry, vermin compost mix are used.
- They provided the certificate for organic and later in 2010 they were named as the first Organic village in the state.
- Only one of the respondents has livestock other than agriculture in their household, 9 of the respondents have poultry.
- In most of the households of Niravu all the members of the family equally take care of the crops.
- Out of the 60 respondents only 8 were traditionally farmers.
- 52 of the 60 respondents have started this new culture of farming only because of organic village project and also because of the awareness made by the officials of residence among all the households.
- Intensity in farming has been increased,
- Awareness on the field of farming and organic farming has been increased enormously.
- The production and productivity has been also increased,
- Frequency of life style disease has been decreased and
- The fertility of soil has been increased,
- The major constraints faced by the respondents were lack of time or to find some time to do farming.

Suggestions

- Most of the farmers have poor knowledge on the value addition of organic products. Hence, more educational programmes have to be organised on value addition aspects.
- Mainly the small farmers have been engaged in organic farming. Hence, it is necessary to attract large farmers.
- Niravu should spread their hands to other panchayath of our state.
- More government support for organic farming has to be provided.
- There are more consumers for organic products, but the number of organic producers is minimal.

Conclusion

Organic farming over the last few decades has proved to be successful; but the differences in culture, ecology and geographical factors necessitate adoption of situation-specific principles and techniques. The farmers of Kerala, as elsewhere are experimenting on this. Some have succeeded, others are in the process of evolution and yet others have failed but new options are being tested out. One of the main arguments against organic farming is that it would not meet the food requirements of an ever- increasing population. But a brief look at the era of modern agriculture would show that, in spite of the booming agricultural production, more people die of starvation and malnutrition than before. Inequitable distribution of food rather than insufficient production is the root of the problem.

As ecological farming practices slow soil erosion and the depletion of soil fertility, it safeguards the future food security of the nation. In the past 10 - 15 years, many farmers in Kerala other than those who continued the traditional methods, have taken up organic farming quite earnestly. Those who reverted from modern intensive agriculture to organic farming had to face many immediate problems. Sudden withdrawal of the external inputs led to steep fall in yield. The high yielding varieties of seeds had to be replaced by indigenous ones. The gap of 30 - 40 years created a vacuum in the knowledge of traditional agricultural practices. The prevalence of modern agriculture in the majority of the cultivable areas makes it difficult to maintain organic purity in the soil and atmosphere. Moreover, the organic farmers are scattered all over the state with a few pursuing it seriously. While it has been proven beyond doubt that the organically grown food is much better in quality, it remains to be established that, in terms of total productivity and economic viability, organic farming can compare with modern intensive agriculture. Perhaps the most revealing statement on the agricultural situation in Kerala in recent times is in the Kerala State Resource based Perspective Plan 2020 AD (Kerala Land Use Board, 1997). Giving a bird's eye-view of agriculture in Kerala, it strongly recommends the adoption of sustainable agricultural practices at the earliest.

Our Government is also implementing many schemes and programme to bring back our traditional farming. Even after green revolution our country is not free from malnutrition and, are not able to produce food grains to feed our 1.25 billion Indians. After all these development, what we have now is increase in number of hospitals and a set of unknown diseases-which are non curative. Chief minister Pinarayi Vijayan appears to have got into mission mode to ensure the success of NAVA keralam mission, his government's first ambitious multi-dimensional development project to

be launched, in an article Mr. Vijayan indicated a huge challenge the government faces in implementing this programme with focus on sanitation, water conservation, promotion of agriculture. Haritha keralam mission 2016 - envisages a clean state by taking up various waste management programme and promotion of organic farming.

Impact of Niravu organic village in Vengeri panchayath and Kozhikode district; has made many other residences and panchayath to restart the culture of farming in their households. Now people are aware that many of the health problems can be only solved if we cultivate what we want. The pesticide socked vegetables from other states made Kerala a state of disease and the health condition diminish.