

“Women Farmers and Organic Farming: Case Study”

A dissertation submitted to the University of Kerala in partial
Fulfillment of the requirement for the degree of

MASTER OF SOCIAL WORK

2016-2018

Submitted by

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Exam Code : 91514403

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Subject Code : SW 2.4.5

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DECLARATION

I, Vani V R do hereby declare that the dissertation titled “Women Farmers and Organic Farming : Case Study” is based on the original work carried out by me and submitted to the University of Kerala during the year 2016-2018, towards partial fulfillment of the requirements for the Master of Social Work Degree Examination. I also state that this work has not been submitted for the award of any degree, diploma, fellowship or other similar title of recognition before.

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CERTIFICATION OF APPROVAL

This is to certify that this dissertation entitled “Women Farmers and Organic Farming : Case Study” is a record of genuine work done by Ms. Vani V R fourth semester Master of Social Work student of this college under my supervision and guidance and that it is hereby approved for submission.

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ACKNOWLEDGEMENT

Fore mostly I extend profound thanks to Almighty God who has blessed me the opportunities and intellectual ability to complete my research successfully.

*I was blessed to have **Dr. Sonny Jose., Associate Professor & Head,** Department of Social Work, Loyola College of Social Sciences as my guide. He was the leading spirit in my endeavour; he had motivated me in my times of my confusion, stood for me, with me. At this juncture I extend my heartfelt respect and gratitude for all the pain that he had taken for the completion of my study.*

*I extend my heartfelt gratitude to **Dr.Saji.P.Jacob,** Principal Loyola College of Social Sciences, **Fr.Sabu P.Thomas ,Fr.Saji Joseph S.J., and Dr. Jasmine Sarah Alexander** faculties Department of Social Work for their help on various occasions during the course of this work.*

*I express my sincere thanks to **Dr. Sunil Kumar,** Librarian and **Mr. George Mathew** assistant librarian, Loyola College of Social Sciences for providing necessary reference materials, and their kind support for the successful completion of my work so far.*

*I express my sincere gratitude to all the **respondents** who have participated in the process of my data collection.*

*It would not have been possible for me to successfully complete this work without the constant encouragement and support of my **beloved family***

*I could never conclude this without mentioning my **dearest friends,** whose whole hearted support made me to present this before you.*

Vani V. R.

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ABSTRACT

Women make significant contributions in agriculture and food systems worldwide and they represent 43% of the agricultural labour force. They are also having wide range of roles within and outside the house hold which include administrators of the home, healers, counsellors, community leaders, mothers and wives.(Winder 2018). Various researches seem to suggest that organic farming has positive impacts on women, such as improvements in health and food security (Vogel and Rarcher, 2017). There are improvements in health, food security and economic improvements for women through organic farming and women profit from the association in Women Self-Help Groups which enhances cooperation of women. They also face certain challenges, such as a higher workload and a widening gender gap due to uneven distribution of knowledge.

The present study, qualitative in nature tries to verify the transformative experiences of women indulged in organic farming by to studying the impact of organic farming on the individual farmer-women's life. The study examines their motives for indulging in organic farming, the challenges encountered during farming, the coping strategies adopted and further attempts to verify if there are transformative experiences in the social, economic and health spheres of women organic farmers. It adopts the case study design. The samples are selected through purposive sampling strategy and the thematic analysis is used for discussion and interpretation. It was found that the farmers had different motives to engage in organic farming- an improvement in income, food security, environmental concerns, etc. The challenges faced by them were pest attacks, poor soil quality, climate change, etc. Coping strategies adopted in organic pest repellents, bio-fertilizers and time management techniques. Those who engaged in organic farming, found that the activity rewarding and positive.

Chapter I
Introduction

1.0 Introduction

Global origin of Agriculture

Agriculture, at its inception was about the active production of useful plants or animals in ecosystems created by people. Agriculture has often been conceptualized narrowly, in terms of specific combinations of activities and organisms - wet-rice production in Asia, wheat farming in Europe, cattle ranching in the Americas, and the like - but a more holistic perspective holds that humans are environmental engineers who disrupt terrestrial habitats in specific ways. Anthropogenic disruptions such as clearing vegetation or tilling the soil cause a variety of localized changes; common effects include an increase in the amount of light reaching ground level and a reduction in the competition among organisms. As a result, an area may produce more of the plants or animals that people desire for food, technology, medicine, and other uses.

Over time, some plants and animals have become domesticated, or dependent on these and other human interventions for their long-term propagation or survival. Domestication is a biological process in which, under human selection, organisms develop characteristics that increase their utility, as when plants provide larger seeds, fruit, or tubers than their wild progenitors. Known as cultigens, domesticated plants come from a wide range of families (groups of closely related *genera* that share a common ancestor; *genus*). The grass (*Poaceae*), bean (*Fabaceae*), and nightshade or potato (*Solanaceae*) families have produced a disproportionately large number of cultigens, because they have characteristics that are particularly amenable to domestication. Domesticated animals tend to have developed from species that are social in the wild and that, like plants, could be bred to increase the traits that are advantageous for people. Most domesticated animals are more docile than their wild counterparts, and they often produce more meat, wool, or milk as well.

Because it is a cultural phenomenon, agriculture has varied considerably across time and space. Domesticated plants and animals have been, and continue to be raised at scales ranging from the household to massive commercial operations.

Agriculture developed independently in many regions of the world; it has no single, simple origin. A wide variety of plants and animals have been independently domesticated at different times and in numerous places. The first agriculture appears to have developed at the

closing of the last Pleistocene glacial period, or Ice Age, about 11,700 years ago. At that time temperatures warmed, glaciers melted, sea levels rose, and ecosystems throughout the world reorganized. The changes were more dramatic in temperate regions than in the tropics.

In the Americas, squash (*Cucurbita pepo* and *C. moschata*) existed in domesticated form in Southern Mexico and Northern Peru by about 10,000–9000 BP. By 5000–3000 BP the aboriginal peoples of Eastern North America and what would become the Southwestern United States were turning to agriculture. In sum, plant and animal domestication, and therefore agriculture, were undertaken (Gray et al., n.d.).

The Indian Sub-continent

Research indicates two early stages of agricultural development in South Asia. In the earlier stage, dating roughly from 9500 to 7500 BP, agriculture was being established in parts of Pakistan, in the North-western most part of the subcontinent. At the ancient site of Mehrgarh, where the earliest evidence has been found, barley was the dominant crop and was apparently supplemented with some wheat. The barley found there is the well-developed domesticate, six-row barley. A small amount of wild barley and two-row domesticated barley have also been recovered, although archaeologists do not think that barley was independently domesticated in this region. Four types of wheat—einkorn, emmer, durum, and bread wheat—have also been found. All had diffused from Southwest Asia, so it is thought that barley probably did so as well. However, the early barley and wheat in Mehrgarh have predominantly small spherical grains, indicating that varieties adapted to local conditions were developed there. No evidence of irrigation has been found. Goats and sheep were also raised at Mehrgarh at this time.

Agriculture was well established throughout most of the subcontinent by 6000–5000 BP. During the 5th millennium BP, in the alluvial plains of the Indus River in Pakistan, the cities of Mohenjo-Daro and Harappa experienced an apparent explosion of an organized, sophisticated urban culture. This society, known as the Harappan or Indus civilization, flourished until shortly after 4000 BP; it was much more extensive than those of Egypt or Babylonia and appeared earlier than analogous societies in northern China. Harappan society was remarkably homogeneous, thoroughly individual and independent, and a technological peer of the early civilizations of China and Egypt.

Little archaeological or pictorial evidence of farm implements has survived. It has been surmised, however, that the cereals could have been sown in the fall, on inundated land after

the annual flooding of the rivers had receded, and then harvested in spring. That system continues to be used into the 21st century; it involves minimal skill, labour, and equipment, as the land does not have to be ploughed, fertilized, or irrigated.

The people of the Indus civilization were engaged in a great deal of commerce, and there is proof of river and sea traffic. There was a trading post at Lothal on the Gulf of Cambay with a brick dockyard and an elaborate channel and spillway. Two-wheeled bullock carts and light covered wagons - forms of transportation that remain common in the early 21st century were used for local travel. Caravans of pack oxen were the principal mode of transportation over longer distances. South India, centre of the later distinctive Tamil culture, constituted a second, initially independent agricultural region. Crops were being raised there during the first half of the 4th millennium BP. Two varieties of pulses (legumes) and finger millet (also called *raggee*) were cultivated in south India. (Encyclopedia Britannica,n.d) .Kerala is an agrarian economy. Cash crops, like coconuts, rubber, tea and coffee, pepper and cardamom, cashew, areca nut, nutmeg, ginger, cinnamon, cloves and the like, give the agriculture of Kerala a distinct flavour (Shodhganga,n.d).

Despite many setbacks, Indian agricultural scenario has surely undergone many drastic changes and has achieved many milestones. The Green Revolution (1967-1978) transformed India from a food deficient stage to a surplus food market. In a span of 3 decades, India established itself as a net exporter of food grains. Interestingly, some developed countries, mainly Canada, which were facing a scarcity in agricultural labour, were so impressed by the results of India's Green Revolution that they showed interest in allowing farmers experienced in the methods of the Green Revolution to their own country. Many farmers from Punjab and Haryana states were then sent to Canada by Government of India to settle there.

Also in the Indian context, worth mentioning are the significant results achieved in the fields of dairying and oil seeds through our white and yellow revolutions respectively. As of now, in terms of agricultural output, India is ranked second in the world. India is also the largest producer in the world for milk, cashewnuts, coconuts, tea, ginger, turmeric and black pepper. India also boasts of the largest cattle population (193 million) in the whole world.

Our country is also the second largest producer of wheat, rice, sugar, groundnut and inland fish. India is the third largest producer of Tobacco. India is home to 10 per cent of the world fruit production with first rank in the production of fruits like banana and sapota .Presently,

Indian Agriculture is witnessing a phase of diversification. During recent years, much awareness has been generated on shifting to high-yielding varieties (HYV) of crops from conventional crops. This has enabled a successful transition in Indian Agriculture from its stagnation to a growth path. The competitive advantages that Indian agriculture can surely boost are favourable agro-climatic zones, huge irrigated lands, enough supply of skilled, educated, technical and scientific workforce suitable for this field (Indian Education,n.d).

Organic Farming and the World

The concept we know today as ‘organic farming’ is an amalgam of different ideas rooted mainly in the German-speaking and English-speaking worlds. These ideas arose at the end of the 19th century, especially the knowledge of biologically oriented agricultural science, the visions of Reform movements and an interest in farming systems of the Far East. Between the two World Wars ‘modern’, chemical-intensive, technically advanced farming faced a crisis in the form of soil degradation, poor food quality and the decay of rural social life and traditions. As a solution to this crisis, organic farming pioneers offered a convincing, science-based theory during the 1920s and 1930s that became a successful farming system during the 1930s and 1940s. But it was not until the 1970s, with growing awareness of an environmental crisis, that organic farming attracted interest in the wider worlds of agriculture, society and politics. The leading strategies proposed to achieve sustainable land use included a biological concept of soil fertility, intensification of farming by biological and ecological innovations, renunciation of artificial fertilizers and synthetic pesticides to improve food quality and the environment and, finally, concepts of appropriate animal husbandry

Organic farming developed almost independently in German-speaking and English-speaking countries in the early 20th century. Its origins need to be understood in the context of four developments going on at the time: (i) a crisis in agriculture and agricultural science; (ii) the emergence of biologically oriented agricultural science; (iii) the life and food reform movements; and (iv) growing Western awareness of farming cultures of the Far East.

Agriculture and agricultural science underwent a crisis between the two World Wars in which they faced ecological and soil-related as well as economic and social problems. The use of mineral fertilizers, pesticides and machinery – the chemical-technical intensification of farming – was variously seen as either a cause of or a solution to these problems. Scientific and agricultural debates in Germany discussed the increased use of mineral fertilizers and the

corresponding neglect of organic manuring (summarized in Vogt, 2000a) as a major cause of several problem (Lockeretz, 2007).

India and organic farming

Organic farming was practiced in India since thousands of years. The great Indian civilization thrived on organic farming and was one of the most prosperous countries in the world, till the British ruled it. In traditional India, the entire agriculture was practiced using organic techniques, where the fertilizers, pesticides, etc., were obtained from plant and animal products. The cow, not only provided milk, but also provided bullocks for farming and dung which was used as fertilizers.

Shift to Chemical Farming in 1960s

During 1950s and 1960s, the ever increasing population of India and several natural calamities lead to a severe food scarcity in India. As a result, the government was forced to import food grains from foreign countries. To increase food security, the government had to drastically increase the production of food in India. The Green Revolution (under the leadership of M. S. Swaminathan) became the Governments most important program in the 1960s. Large amount of land was brought under cultivation. Hybrid seeds were introduced. Natural and organic fertilizers were replaced by chemical fertilizers and locally made pesticides were replaced by chemical pesticides. Large chemical factories such as the Rashtriya Chemical Fertilizers were established.

Before the Green Revolution, it was feared that millions of poor Indians would die of hunger in the mid-1970s. However, the Green Revolution, within a few years, showed its impact. The country, which was greatly relied on imports for its food supply, reduced its imports every passing year. In 1990s, India had surplus food grains and once again became and exporter of food grains. As time went by, extensive dependence on chemical farming started to show its darker side. The land is losing its fertility and is demanding larger quantities of fertilizers to be used. Pests are becoming immune requiring the farmers to use stronger and costlier pesticides. Due to increased cost of farming, farmers are falling into the trap of money lenders, who are exploiting them no end, and forcing many to commit suicide. Both consumer and farmers are now gradually shifting back to organic farming in India. It is believed by many that organic farming is healthier. Though the health benefits of organic food are yet to be proved, consumers are willing to pay higher premium for the same. Many farmers in India are shifting to organic farming due to the domestic and international demand

for organic food. Further stringent standards for non-organic food in European and US markets have led to rejection of many Indian food consignments in the past. Organic farming, therefore, provides a better alternative to chemical farming. According to the International Fund for Agriculture and Development (IFAD), about 2.5 million hectares of land was under organic farming in India in 2004. Further, there are over 15,000 certified organic farms in India. India is one of the most important suppliers of organic food to the developed nations. No doubt, the organic movement has again started in India. (WOOFIndia)

Organic farming and Kerala

The organic farming in Kerala from a simple beginning, 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 90kg/ha and 288g/ha respectively, it was only

60kg/ha and 224g/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.

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**. (Organic Kerala Charitable Trust).

Thanal and Organic Farming

Thanal started in 1986 as a small group of nature enthusiasts to bring environmental awareness to the people. Its aim was to raise an environmentally conscious generation by conducting studies on natural history and bringing environmental education to schools and colleges. Thanal's transformation from nature enthusiasts to serious environmental activists was triggered by the rise in pesticide use and pesticide related illness, increasing deforestation, improper handling of urban waste and other alarming issues. From the 1970s to the 2000s over 50000 villagers in the district of Kasargod were plagued by convulsions, physical deformities, congenital anomalies and cancer. These maladies were traced to the pesticide Endosulfan sprayed over the cashew plantations.

Today, the NGO is changing the toxic side of farming to a healthy one through our social enterprises - the Organic Bazaar, and the Agro-Ecology Centre. This initiative provides thousands of consumer's access to safe and nutritious food, while enhancing the quality of life of hundreds of farmers. Thanal also have a national movement to revive the lost glory of our farming, through the Save our Rice Campaign. Thousands of farmers in five states are today adopting ecological farming practices, conserving and cultivating traditional varieties of high quality seeds, and ensuring the supply of organic rice to consumers across these states. (Thanal, n.d.)

Organic Bazaar

Inspired by Berkeley Farmers Market (California, USA) Organic Bazaar was launched by Thanal in 2003 to bring Organic farmers, producers and consumers together for efficient exchange of organic food. It was launched in 2003 as a once in a month - Second Saturday bazaar. Later the frequency of the bazaar was increased. It was made possible through consistent and persistent extension work, capacity building and sensitization done among marginal farmers in different pockets of Kerala for enlarging the supply base. Consumer sensitization and awareness programmes also played an important role in getting more consumers to support Organic Bazaar. (Thanal, n.d.)

Women farmers in the world at a glance

Around 48% women worldwide are economically active.]Among women in the least developed countries who report being economically active, 79% report agriculture as their primary source of livelihood. A significant share of households in all regions is headed by women, yet their access to productive resources and services are limited. Rural women typically work longer hours than men, when one takes into account both paid productive and unpaid reproductive or domestic and care responsibilities. When these tasks are taken into account, women's total work hours are longer than men's in all regions. Women tend to be employed for labour-intensive tasks, generally earn lower wages than men and are more likely to be paid at piece rate. For example, in the casual agricultural labour market in Africa, women's casual wages (whether in cash or in kind) are usually half of men's wages. As farming alone cannot sustain rural families, the off-farm economy is an increasingly important source of household income. Yet rural women do not have equal access to these employment opportunities. Women wage workers dominate employment in areas of export-oriented high-value agriculture in the developing world. For instance, women represent half or more of employees in countries such as Chile, Ecuador, Guatemala, Kenya and South Africa.(Farming First and Food and Agricultural Organisation,n.d).

Female farmers in India

To work for a living for a woman in India is not easy especially if she is a farmer. We often see farmers marching in protest, holding big rallies, blocking roads with their produce thrown about but we never see women farmers or their leaders marching in agitation. Yet there are many women farmers in the country and 16 October has been declared Women Farmers' Day. According to OXFAM (2017), 40 per cent of women in the labour force rely on

agriculture as their primary source of income. They are engaged in plantations, dairy farming, agro processing and packaging. Most women in the villages are engaged in activities like winnowing and harvesting in the family's plot of land but there are many who are forced to undertake full time farming because of migrant husbands or because their husbands have committed suicide. Since 2013, over 12,000 farmers have committed suicide every year and the burden of debt repayment has fallen on the wives who often have no assets and have to work full time as farmers to pay back debts.

Short term migration has also become very common in villages as opportunities open up in cities for earning higher cash incomes. Women are forced to become the main operators of farms and they have to make all farming decisions. This phenomenon of feminisation of agriculture is taking place in a number of developing countries including India and women are forced to play multiple roles as entrepreneurs, labourers and cultivators. They have to compete with men in getting access to resources which is difficult.

Most women who are working on farms do not own land. Only a small percentage (12.8 per cent) owns it. According to 2011 census, out of total number of female main agricultural workers, 55 per cent are agricultural labour and only 24 per cent are actual cultivators. Even though women make up for more than one third of the Indian agricultural workforce, their presence is ignored and their incomes/wages are lower than that of men. Budget 2018 however acknowledged the role of women in agriculture and 30 per cent of budget allocation is for women beneficiaries in all ongoing schemes and programmes as well as development activities. If implemented successfully, many problems faced by women farmers could be ameliorated (Sengupta, 2018).

Kerala and women farmers

The Kerala State provides a different picture of the success of women in farming. Collective power of women groups, integration of local self-governments and proactive credit schemes have enabled landless women to emerge as commercial organic farmers in Kerala. Women are now visible as major farmers in the State, cultivating large areas of paddy, vegetables, and banana and tuber crops, on a group basis. A large number of women are gaining identity as "farmers" under these women collectives.

The socio-economic transformation during the last three decades has resulted in large scale conversion of paddy fields for non-farming uses in Kerala. Factors like increasing labour cost, lack of effective market support and resulting low returns and frequent vagaries of

climate had created a disinterest among land owning farmers to continue farming. Large patches of paddy lands have been left fallow. This has resulted in reduction of employment opportunities in the farming sector, which has affected the women farm workers and their families severely. Traditionally, women have been the major partners of the Kerala's farming system. Most of them are either engaged as unpaid family workers in their family farms or engaged as paid workers in other farmers. One of the major constraints in general, the women groups across the State face is the non-availability of land for farming. Most of the land owners are afraid of losing their right on land by leasing out. In Kerala, there is a total ban on leasing of land for cultivation as part of the Land Reforms Act. But various types of informal leasing and hiring out do exist in practice. Even in such informal leasing arrangements, most of the owners are not ready to allow the women groups to use the land for farming. This is a constraint which seriously affects the sustainability of women's participation in farming. Farming livelihoods that excluded women, in fact served as an ideal opportunity for the Government of Kerala. Women, as groups, were motivated to take up farming, utilizing micro credit and hired fallow lands in their localities, through the Kudumbashree programme of the government.

Kudumbashree, the State Poverty Eradication Mission of Kerala, started in 1998, has established State-wide base of community organizations of women to work in tandem with local self-governments for poverty eradication through socio-economic development and women empowerment. In each Local Self Government (LSG) Unit – Gram Panchayath or Urban Local Body, the Kudumbashree has a federated structure of three tiers – Neighborhood Group (NHG), Area Development Society (ADS) and Community Development Society (CDS).

Community Development Society (CDS), the *grampanchayath* level co-ordination unit of the Kudumbashree Mission, has a great role in the implementation of the system. The interface of the CDS and LSG enables participatory governance, bottom up consolidation of development demands in the community and acts as a tool for the LSG to converge resources for local development and poverty alleviation from various sources. Credit support is made available for group farming with almost zero interest through the Joint Liability Group (JLG) Scheme of the NABARD. Four to five women take up group farming activities and raise credit on group basis under the JLG Scheme. The credit subsidy support Kudumbashree received from the Mahila Kissan Sasaktheekaran Pariyojana (MKSP) under

the National Rural Livelihood Mission (NRLM) has also played pivotal role in making low interest credit a reality for the women groups, helping them to take up farming.

Eco-friendly group farming

Most of the members of the women groups are following eco-friendly farming with low chemical inputs, while a considerably large number among them are able to follow organic farming as well. For organic manure, some of them have their own manure production using cow dung, poultry manure, vermin-compost, wild plant manure, coir pith compost, etc. For pest management, the women groups largely depend on bio inputs produced. The women do feel that eco-friendly farming is both cost and labour intensive, without fetching a premium price for their produce. But some of the women groups expressed their satisfaction for getting opportunity to provide safe food available at cheaper rate to their local communities.

Some women groups got motivated to take up processing of their produce and to sell value added products. The Alamkode and Thennala panchayaths have demonstrated their innovative leadership by collecting the paddy produced by the women groups, getting it milled at local rice mills, and selling under their own brand names- Thennala Rice and Puthari Organic Rice of Alamkode. Various rice based products such as rice flakes, rice powder, broken rice etc., are also introduced into market from these two women farmer groups. These initiatives are being supported by NABARD to help them establish as Producer Companies of women farmers. (Geethakutty,n.d).

1.1 Statement of the Problem

Women make significant contributions in agriculture and food systems worldwide and they represent 43% of the agricultural labour force. They are also having wide range of roles in- and outside the household, which include administrators of the home, healers, counsellors, community leaders, mothers and wives.(Winder 2018). Expanding role of women in agriculture around the world has led to the feminization of agriculture (Park,2016). Through researches it has been proved that organic farming has positive impacts on women, such as improvements in health and food security (Vogel and Rarcher,2017). There are improvements in health, food security and economic improvements for women through organic farming and women profit from the association in Women Self-Help Groups which enhances cooperation of women. They also face disadvantages, such as a higher workload and a widening gender gap due to uneven distribution of knowledge. Organic farming by itself offers great

opportunities for women (Altenbuchner and Larcher , 2017). It is stated that working with plants and in the outdoors, benefits the mental health, mental outlook, and personal wellness of individuals. Further, it induces relaxation, reduce stress, fear and anger, blood pressure, and muscle tension. research shows that natural scenes evoke positive emotions, facilitate cognitive functioning, and promote recovery from mental fatigue for people who are in good mental health. (Kent, 2017)

The present study tries to study the impact of organic farming on the individual farmers life, understand their motives, challenges faced during farming, the coping strategies adopted and tries to verify if there are transformative experiences in the social ,economic and health spheres of women as suggested in the literature . It personally helps the researcher to understand better about the life of the organic farmer, and its prospects as the researcher is also interested in the field of farming and environment conservation.

1.2 Significance of the Study

The study is very significant we are living in an era of women empowerment and environmental protection and preservation. The study supports both these concepts as they are interconnected. The findings of this research will help to understand the motives, challenges faced, coping strategies adopted and impact of organic farming and women farmers indulged in organic farming. It will be helpful in policy formulation and as it would help the policy formulators to understand better about the life of women farmers and the challenges they face and thus necessary steps can be taken to overcome it. The study also tries to understand the motives by the women farmers to start organic farming, which can be adopted with women in other places also and she can be empowered, thus empowering different families, through the women. The research also focuses on impacts of organic farming in the social, economic and health arena surrounding women and thus the study can help in understanding the impacts when the process is practiced in other places.

There has been many studies conducted on the involvement of women farmers and organic farming, but not much studies which bring the aspects of motives, challenges, coping strategies and impacts under one roof. This particular study studies the process of organic farming and women farmer in a way from the beginning that is their motive to the end, i.e. the impacts. Thus it has an element of completion in it, which could be used by the policy makers, public sectors and private sector organizations to understand the life of women

organic farmers in different stages. The study can also substantiate other studies in the field of conventional farming, environment, entrepreneurship etc.

1.3 Title of the Study

“Women farmers and Organic Farming: Case Study”

1.4 Research Questions

Broad research question

What is the impact of individual organic farming initiatives on the lives of women farmers?

Sub questions

1. What are the motives of engagement of women in organic farming?
2. What are the challenges faced and coping strategies adopted by the women farmers while engaging with organic farming?
3. What are the social, economic and health impact of organic farming on the lives of women farmers?

1.5 Conclusion

The chapter introduces the study to by describing about the history of farming in the world and then coming to India and Kerala. Later it moves to the concept of organic farming and the world wide organic farming movements and its implications in India and then coming to Kerala and explaining its way of organic farming as well as naming some initiatives from the private as well as public sector. The chapter then introduces about the main respondents in the study, who are the women organic farmers and explains about their importance in the field of organic agriculture. The statement of the problem describes about verifying the transformative experiences of women organic farmers, which are well reviewed in the literature. It comes to and end by introducing the title of the study and the research questions.

Chapter II
Literature Review

2.0 Literature Review

2.1 Introduction

The literature review consists of studies and articles divided into three following sections:

- 1) Studies on the motives of farming and organic farming
- 2) Challenges faced by people indulging in the farming and organic farming process.
- 3) Impact-social, economic and health- organic farming on women farmers

The studies within the section are further divided on the basis of topics related to the particular section.

2.2 Reviews

I. Studies on the motives to farming and organic farming

Introduction

This section consists of the studies relating to the motives of farming in general and organic farming in particular and the studies have been divided on the basis of different factors which acts as the motives of farmers as well as women farmers in starting the process of farming and organic farming. The factors include 1) Food Security 2) Environment and Social Responsibility 3) Farming Family background 4) Increased income 5) Healthy living 6) Support from public and private agencies

1.1 Studies relating to women and agriculture

Introduction

This section consists of studies and articles which relates to women and agriculture in general. It connects women empowerment and agriculture and servers as a primary part to understand women and their relation to agriculture.

Galie, Jiggins and Struik, 2013 in their study Women's identity as farmers: A case study from ten households in Syria a study on women's roles and identity as farmers, as perceived by 17 women and 24 men in three Syrian villages, which was carried out between 2007 and 2009 as part of long-term, in-depth research in these villages in the context of a participatory plant breeding programme. It found that none of the women respondents thought that being a

farmer was associated with negative perceptions and three women explicitly said that an identity as a farmer was positive in their village.

World Bank, 2017 in their article *Women in Agriculture: The Agents of Change for the Global Food System* state that Women are the backbone of the rural economy, especially in developing countries. They make up almost half of the world's farmers, and over the last few decades, they have broadened their involvement in agriculture. The number of female-headed households has also increased as more men have migrated to cities. As the primary caregivers to families and communities, women provide food and nutrition; they are the human link between the farm and the table.

Altenbuchner, Vogel & Larcher , 2017 in their study *Effects of organic farming on the empowerment of women: A case study on the perception of female farmers in Odisha, India* highlights that there are improvements in health, food security and economic improvements for women through organic farming. Women profit from the association in Women Self-Help Groups which enhances cooperation of women. Women also face disadvantages, such as a higher workload and a widening gender gap due to uneven distribution of knowledge. Exclusion from participation and lack of empowerment of women on the community level leads to widening of gender gaps. Organic farming by itself, although it offers great opportunities for women, does not automatically lead to more equality or empowerment. Specific focus on gender issues and dedicated efforts are necessary to tap the full potential in terms of creating equality.

West, 2018 in her article *How Organic Farming Empowers Women* states that with the rise of organic farming, women saw and embraced an alternate way to participate in agriculture. As an emerging industry, organic agriculture's steep learning curve applied to all new farmers, not just women. Along with the new agricultural model, opportunities grew for everyone outside the fraternity of traditional agriculture for women, and also land-less or otherwise marginalized men making for a more inclusive atmosphere of information-sharing, collaboration, and educational opportunities. The organic farming movement proved it was possible to farm intensively on smaller plots, significantly lowering barriers to entry such as access to large tracts of land and expensive machinery with which to work it. It also redefined where farming could take place, opening the door for farming models based in urban and suburban locations, increasing access to farm-generated income into a wider geography of people. Globally, women farmers play an essential role in reducing world hunger. Women

entering organic farming as new farmers increase access to food and quality nutrition for their immediate family, as well as families in their community. Similar to findings in North America and Europe, women in developing countries tend to farm with a collaborative spirit, using their leadership positions to increase education, environmental health, and food access in their communities.

Prakash, 2003 in his study Rural Women, Food Security and Agricultural Cooperatives stated (Kubala, 2008) that described that there are many constraints that discourage the women in development and thus major sex of the world cannot contribute their power in economic sector. There is patriarchal system that is existed in some societies which does not allow women to work other male workers. There are also cultural barriers and religious interpretations that create hurdles in women social mobility. These factors are resulted the less women participation in agriculture sector. This portion of human being is generally invisible in development activities.

Conclusion

The women are highly prized in the studies and articles and agriculture has been described as a medium which surely empowers women. There are improvements in health, food security and economic improvements for women through organic farming. Literature also describes some disadvantages faced by women in agriculture which includes higher workload and a widening gender gap due to uneven distribution of knowledge. The literature highlights advantages as well as disadvantages related to farming and, with more emphasis on women being an integral part of agriculture and the connection link between the farm and the table.

1.2 Studies relating to food security as a motive to start organic agricultural practices

Introduction

The section highlights the factor of food security of the family being an important motive for the women as well as farmers to undertake the profession of farming. It consists of studies from various authors and organizations like Food and Agricultural organization as well.

Arimond *et al.*, 2010 in their book Agricultural interventions and nutrition: Lessons from the past and new evidence suggest that Agriculture is closely linked to food security, by providing a source of food and nutrients, a broad-based source of income, and by directly influencing food prices.

Sitthisuntikul, Yossuck and Limnirankul ,2018 in their study How does organic agriculture contribute to food security of small land holders?: A case study in the North of Thailand found that the help of organic group and network connected with organic networks in different areas helped the farmers. The members of the organic group and networks could share production methods, food, products, and markets together which was beneficial for food access and economy in households of small land holders. Consumer demand and fair market all small land holders had had a good sale on organic products since most consumers realized on the effect of chemical substances on their health. Therefore, they could earn enough income for buying food and covering expenses of their families. If nobody wanted organic products, economic household would be worse. Encouragement of agencies Government and non-government agencies had encouraged organic agriculture continuously.

Fakged, Morachart & Aunpim ,2016 in their study Developing food security of organic farmers in the northeast of Thailand stated that pragmatically, a few studies imply that it benefit relates to food security in local communities. For example, organic agriculturalists in Ubon Rachathani, Yasothon, and Amnat Charoen Provinces in the lower northeast are able to access various safety foods seasonally in their cultivation area and share safety foods with an organic group in a local community since they stop using chemical substances, emphasize integrated cropping, and depend on farm materials workers in families for cultivation.

Sitthisuntikul, Yossuck and Limnirankul ,2018 in their study How does organic agriculture contribute to food security of small land holders?: A case study in the North of Thailand found that All small land holders performed integrated cultivation within agriculture areas, for example, cropping rice in field, planting tropical fruit in orchard, growing vegetables and herbs in backyard garden, and raising poultry and fish in house courtyard. These practices provided the variety of products that were sufficient to feed their family members in household. The rice field, backyard and orchard functioned as a supermarket in the house. Their family members were able to have rice through year and were able to access fruit seasonally such as banana, grapefruit, longan, and papaya. Therefore, integrated agriculture contributed self-reliance of small land holders and their family members on food access

FAO, 2006 also mentions four aspects of food security: 1) Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid). 2) Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as

the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources). 3) Utilization: Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security. 4) Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

Conclusion

The section connects food security a motive to farming and consists of various studies, which explains it. The report by Food and agricultural organization explains about the four aspects of food security which are well satisfied with the practice of organic farming. All the studies state that, the practice of farming has positively affected the factor of food security of a family.

1.3 Studies relating to Environment and social responsibility as a motive to start organic agricultural practices

Introduction

This section represents studies related to organic farmers, women organic farmers and their responsibility towards the environment as well as the society as a motive to start organic farming. It describes about the morals, green attitudes, ideologies of farmers leading them to adopt organic farming The sections consists of studies from various authors as well as reports from Food and Agricultural Organizations.

Kubala and etal ,2008 in their study Motivations for Organic Farming among Farmers from Malopolska Province, Poland describes that number of researchers suggested that the decision to convert to organic farming may result from various motives. Those most often mentioned include Environmental aspects (that is, concern for the environment; concern for the soil, about chemicals in food, detrimental effects of synthetic chemicals, food quality and the health of farmers, their families and livestock) (Dubgaard and Sorensen, 1988; Flaten et al., 2005; Madden, 1987; Milder et al., 1991; Svensson, 1991). Economic aspects (perception

of organic farming as a profitable, low input system, possibility of obtaining organic premiums) (Fisher, 1989; Willer and Gillmour, 1992). Ideological aspects (organic philosophy, living in harmony with nature, antipathy to chemicals) (Fairweather, 1998; Sullivan et al., 1996) and others (e.g. personal satisfaction)

Flatein et al., 2005 in their study Do the new organic producers differ from the 'old guard?' state that interestingly, motivation tends to change with time in some farmers: from purely financial, observed in farmers who are in the process of converting to organic farming, to environmental motivation, observed in farmers involved in organic farming for some time

Venkatachalam, 2008 in his paper Behavioral economics for environmental policy states that moral concerns are those which are within an individual which includes ethics and personal satisfaction whereas social concerns are those which influence the individual's behavior because of similar people in the reference group; may be farmers of the same cluster or region. More than monetary benefits farmers take up this one as an environmental good.

Burton et al (1999) in the study Analysis of the determinants of adoption of organic horticultural techniques in the UK states that farmer's characteristics mainly age, gender and access to information are very important. The study identified that farmers who have concern on environment

Sheeder and Lynn (2009) in the study Empathy conditioned conservation: "walking in the shoes of others" as a conservation farmer indicates that non-financial considerations such as farmer value, attitudes and perception towards farming can play a role in the switching decision by farmers. Farmers believe that this is a sort of involvement to land and sustainable agriculture and they give high value for that than the economic enhancement they will be having by following conventional practices. For example states that even while facing economic difficulties many agricultural producers have maintained an attitude and ethic that treats farming and related activities as a way of life than as a business or venture to maximize economic benefits.

Rundgren, 2006 in the report Organic agriculture and food security stated that. IFOAM indicates four major principles of organic agriculture practices (1) principle of health—enhancing and sustaining ecosystem and human health by discontinuing chemical substances, (2) principle of ecology—operating production process harmonizing ecological cycle, nature balance, local wisdoms and community culture (3) principle of fairness—providing equity, respect and justice between human and human, and human and environment, and (4)

principle of care—managing organic agriculture with the manner of precaution and responsibility to environment for well-being of current and further generation.

Grunert and Juhl (1995) in the study Values, environmental attitudes, and buying of organic foods, defines an environmentally concerned consumer as the one who knows the production, distribution, use and disposal of products leads to external costs and who evaluates such external costs negatively, trying to minimize them through his/her own behavior. These are the self-oriented consumer characteristics which makes them to purchase organically produced food products. Consumers who have concern for the environmental health will be motivated to purchase more of organic food.

Food and Agricultural Organisation, 2010 in their report Organic Agriculture stated that consumers increasingly demand both environmentally friendly and socially just products which mean that organic certification also requires proof of fair wages, healthy working conditions and the workers' right of association. For countless generations, small farmers in developing countries have inherited and managed complex farming systems adapted to their local conditions. These individual farming systems have helped them survive harsh environments, meet their family's food needs, contribute to local/regional markets and still conserve their natural resources. Many of these farmers would be amazed to know that what they learned from their parents is now part of a modern, global movement. Organic agriculture enhances people's ability to live in harmony with nature and to derive economic benefit from their land. Forty percent of the earth's land is agricultural cropland, managed forests or pasture, so it stands to reason that if agriculture does not exist in harmony with the rest of the earth's environment, the potential for widespread environmental degradation caused by loss of habitats and forests, and by pollution of air, soil and water from agricultural chemicals, looms quite large.

Birkhofer, Smith and Rundlöf, 2016 in their study Environmental Impacts of Organic Farming states that Organic agriculture leads to higher soil quality and reduced nutrient and pesticide leaching compared to nonorganic agriculture. It may lead to a higher provision of ecosystem services and reduced soil erosion compared to nonorganic agriculture, but more research is needed to address these impacts. Organic agriculture leads to higher greenhouse gas emissions if considered per unit product and, on average, has 20% lower yields than intensive, nonorganic agriculture. The current situation of nutrient supply to crop plants in organic agriculture is often not optimal and this is a major challenge for future research.

Intensive, nonorganic agriculture is based on the application of pesticides that cause risks to human health, and organic agriculture can act as an environmentally friendly alternative.

Conclusion

The section goes into the relation between the moral concerns and the green attitudes of farmers, which lead to the adaption of organic farming and thus generating a feeling of environmental as well as social responsibility. It also describes about the consumers, who promote organic agriculture, by buying environment friendly products, which is a thinking from different perspective. It also gives a contrary data that the organic agriculture leads to higher greenhouse gas emissions if considered per unit product. On the whole most of the studies support organic way of agriculture being supportive and protective to the environment.

1.4 Studies relating to farming family background as a motive to start organic agricultural practices

Introduction

The section includes studies which points out the family background of the farmer as well as women farmer being a motive in order to get into the profession of farming. It consists of studies and articles from different authors connecting farming and family. It explains about the concept of family farming and the importance of family gatherings.

Feher and et al, 2010 in their study Motivation and intentions of farmers as regards the development of multifunctional agriculture in micro regions of Northern and Eastern Hungary suggest that the farming families play an important, complex role in both the establishment and development of the farms. On the one hand, the family is an economic factor (joint wealth, land use, source of labour), but on the other it is a subjective driving force in that it motivates the farmer to take economic steps that will ensure or improve the welfare of the family. This latter role is extremely important in farm-level surveys of multifunctional agriculture and in the implementation of measures aimed at enhancing multifunctionality.

Food and Agricultural Organization,n.d states that family farming is the predominant form of agriculture both in developed and developing countries. There are over 500 million family farms in the world. Family farmers range from smallholder to medium-scale farmers, and include peasants, indigenous peoples, traditional communities, fisher folks, mountain

farmers, pastoralists and many other groups representing every region and biome of the world. They run diversified agricultural systems and preserve traditional food products, contributing both to a balanced diet and the safeguarding of the world's agro-biodiversity. Family farmers are embedded in territorial networks and local cultures, and spend their incomes mostly within local and regional markets, generating many agricultural and non-agricultural jobs. All the characteristics above mean that family farmers hold the unique potential to move towards more productive and sustainable food systems if policy environments support them in this path.

Nelson, 2012 in his article *In Families Matter! A Series for Parents of School-Age Youth* suggests that family rituals can offer a set time for families to get together and give each other the attention needed. A family ritual is simply a time that is set aside on a regular basis for a family to get together. This can mean having dinner together, celebrating a holiday together, going to church together, or going for a walk together. It is important that the family ritual be predictable and that other activities are not allowed to upset it. Family rituals help define who we are as a family. It allows time for the family to get together, to share experiences with one another, and to reconnect with each other. Knowing that the family will have time together can help us deal with those times when we are apart.

Swendener , 2012 in the study report *Influences of Farming Background on Farm Women 's Employment Motivations* supports the idea that farming background and identity influence farm women's employment motivations. This research highlights that current farm women make important contributions to the family farming enterprise, yet the motivations for these various contributions may vary by farming background. Their motivations for which work roles they ultimately perform are influenced by not only 47 economic and human capital factors, but also by factors relating to farming/agrarian identity (or a lack of) as well. That is, some women identify with having a role in on-farm activities while some may identify and be more likely to support the farming enterprise via a system they are more familiar with—the waged labor market.

Cummins 2009 in the study *Unraveling the Voices and Identity of Farm Women* suggest that women with a farming background may find it easier to adapt to farm life where years of family history and experience socialized them into a farming role

Garner and Campos ,2014 in their study *Identifying the "family farm"* An informal discussion of the concepts and definitions defines family farming as "Family Farming is a

means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labour, both women's and men's. The family and the farm are linked, coevolve and combine economic, environmental, reproductive, social and cultural functions”

Conclusions

The section includes studies which points out the family background of the farmer as well as women farmer being a motive in order to get into the profession of farming. Most of the studies indicate that the farming family background of the farmer has positively affected the farmer in pursuing the profession. It also suggest that these motivations vary from one family's background to another. The section also highlights about the presence

1.5 Studies relating to increased income as a motive to start organic agricultural practices

Introduction

The section includes studies which indicate that increased income is a motive for pursuing farming or organic farming as a profession. The sections consists of studies from journals, reports as well as news articles, which indicates the motive.

Seufert, Ramankutty, and Foley (2012) in their study indicates that Getting high yield and higher income through organic farming is considered to be another reason for the conversion of farmers. But prior research indicates that these high yield factors are limited to only certain crops. indicates that under certain conditions, that is with good management practices, particular crop types and growing conditions, organic systems can nearly match the conventional yields but not for all the crops at present. But organically produced food products have larger shelf life than conventionally produced crops.

NDTV n.d in an article “How a Woman Farmer Proved Organic Farming is More Profitable” presented case of a women farmer who had increase her production, productivity of land as well as the income from farming by shifting to the organic cultivation. Earlier there was the need of buying pesticides and fertilisers from the market, but after using the bio fertilizers and vermicomposting she is able to prepare the manures herself, from the ingredients in the field, which result in the reduction of expenditure. Earlier she used to spend Rs.15, 000 per acre, which has now been cut down to Rs.6, 000 per acre. There were also cyclones in the

area, when other crops could not withstand it, the ones in her field were repellent to the effects of cyclone.

UNESCAP (2002) in their report Organic agriculture and rural poverty alleviation: Potential and best practices in Asia stated that there is substantial evidence linking organic agriculture with improvements in the profitability and income of poor farmers in developing countries. Case studies show that certain organic farmers' groups were able to double their income due to the lower cost of organic inputs and lower credit costs.

Altenbuchner, Vogel & Larcher, 2017 in their study Effects of organic farming on the empowerment of women: A case study on the perception of female farmers in Odisha, India highlights that there are improvements in health, food security and economic improvements for women through organic farming. Women profit from the association in Women Self-Help Groups which enhances cooperation of women. Women also face disadvantages, such as a higher workload and a widening gender gap due to uneven distribution of knowledge. Exclusion from participation and lack of empowerment of women on the community level leads to widening of gender gaps. Organic farming by itself, although it offers great opportunities for women, does not automatically lead to more equality or empowerment. Specific focus on gender issues and dedicated efforts are necessary to tap the full potential in terms of creating equality.

Conclusion

The section includes studies which indicate that increased income is a motive for pursuing farming or organic farming as a profession. Studies suggest that getting higher income through higher yield has been a motive in starting organic farming. The section also gives evidences to increased income of farmers by adopting to organic farming.

1.6 Studies relating to healthy living as a motive to start organic agricultural practices

Introduction

The section consists of studies relating to the motive of healthy living as a reason to shift from inorganic farming and also to start organic farming. It consists of studies from different authors describing the health aspects of organic farming, the changing consumer behaviour and the ill effects of inorganic farming

Kubala and etal ,2008 in their study Motivations for Organic Farming among Farmers from Malopolska Province, Poland describes that number of researchers suggested that the decision to convert to organic farming may result from various motives. Those most often mentioned include Environmental aspects -that is, concern for the environment; concern for the soil, about chemicals in food, detrimental effects of synthetic chemicals, food quality and the health of farmers, their families and livestock

Rundgren, 2006 in the report Organic agriculture and food security stated that . IFOAM indicates four major principles of organic agriculture practices (1) principle of health—enhancing and sustaining ecosystem and human health by discontinuing chemical substances, (2) principle of ecology—operating production process harmonizing ecological cycle, nature balance, local wisdoms and community culture (3) principle of fairness—providing equity, respect and justice between human and human, and human and environment, and (4) principle of care—managing organic agriculture with the manner of precaution and responsibility to environment for well-being of current and further generation.

Alwitt and Pitts, 1996 In the study Predicting Purchase Intentions for an Environmentally Sensitive Product Growing concern for health and need of consuming healthy food products is making the customers to buy organically produced food products. This changing consumer behavior also has an impact on farmer to switch. Changing consumer attitudes have also made the organic farming groups more organized, formation of organic farmer clubs and farmer clusters are examples. Marketing of organically produced fruits and vegetables also got influenced by these changing purchase patterns of consumers. Research has supported the attitude intention relationships showing that environmental attitudes do have an impact on consumers green purchase intentions.

Pimentel and Greiner, 1997 in the book section Environmental and socio-economic costs of pesticide use stated that usage of chemicals on the agricultural land is reducing the soil fertility and in succeeding crop seasons farmers are forced to use more of chemicals to get the same yield as received before. Farmers use the chemical inputs since they are getting the high yields. But the negative impacts are equally important to be considered. Continuous use of chemical inputs such as pesticides and fertilizers have caused damage to the environment, human ill health, negatively impacted agricultural health and caused problems to the environment and agricultural sustainability

Paul and Rana, 2012 in their study Consumer behavior and purchase intention for organic Food state that consumers prefer organically produced food products rather than products produced using synthetic chemicals. The benefits of consuming organic food products are health, nutritional value, animal welfare and environmental protection. Belief on high quality and better tastes along with consciousness on health are found to be the primary drivers behind the purchase of organic food products.

Conclusion

The section consists of studies relating to the motive of healthy living as a reason to shift from inorganic farming and also to start organic farming. The studies describe that health has been considered as a very important factor by both the producers as well as the consumers, which has led to cultivation of crops through organic practices. The negative impacts of continuous use of chemical inputs such as pesticides and fertilizers have caused damage to the environment, human ill health, negatively impacted agricultural health.

1.7 Studies relating to support from Government and Non-Government sector as a motivational factor to start organic agricultural practices.

Introduction

The section relates the motives of a farmer to pursue the profession of organic farming to the support from Government and Non-Government organizations. The sections consists of studies as well as articles which explains the roles played by external agencies in support of a farmer in general and an organic farmer in particular.

Fischer and Qaim, 2012 in their study Linking smallholders to markets: Determinants and impacts of farmer collective action in Kenya also highlight the importance of farmer groups as their study indicates that farmer groups are important catalysts for innovation adoption due to efficient information flows. The FBOs also release sustainability plans to continue the facilitation works once NGO projects phase out. Considering the above-mentioned services provided to farmers by NGOs, the technical efficiency can be improved by coaching and monitoring services which enable farmers to use inputs reasonably, innovatively and timely. This is manifested by improvements in carrying out such operations as planting, fertilizer application, weeding and harvesting, where the same level of input use might render higher output quantities due to improved farming practices. Focusing on the managerial side, access to inputs and proper timing of input application is critical in agriculture. As a result, NGOs

and FBOs enable farmers to achieve higher outputs with the same quantity of inputs as well as the timely use of such inputs, thereby yielding higher technical efficiency. The involvement of NGOs in the promotion of soybean farming in Ghana is likely to positively impact sustainability on multiple dimensions. From the economic perspective, improvements in technical efficiency would ensure the viability of farming as an economic activity

Uddin, 2014 in 2014 in his study Pond Fish Farming under NGO Support and Individual Management: A Comparative Socioeconomic Study concluded that there is a great impact of NGO intervention on pond fish production, employment creation and income generation. Therefore, it can be concluded that there is great scope to improve the overall economic condition of the fish farmers in terms of higher income and more employment generation through the intervention of NGO. The NGOs should improve and deliver high quality extension service to farmers in time so that the farmers gradually learn and adopt aquaculture technology that sustains their increasing productivity and income in the long-run. The NGOs should strengthen its technology dissemination capacity through more careful recruitment of field staff, adequate provision of training, logistic supports and more intensive efforts towards human resource development

Thanal an NGO started in 1986 as a small group of nature enthusiasts to bring environmental awareness to the people. Its aim was to raise an environmentally conscious generation by conducting studies on natural history and bringing environmental education to schools and colleges. Today, the NGO is changing the toxic side of farming to a healthy one through our social enterprises - the Organic Bazaar, and the Agro-Ecology Centre. This initiative provides thousands of consumer's access to safe and nutritious food, while enhancing the quality of life of hundreds of farmers.

Asianet News, 2015 describes about Thanal and the farmers supported by them. It talks about organic bazar, which collects all the organic vegetables and sell them to the consumers, ensuring proper marketability to the producers, avoiding the middle men.

Reddy,2010 in the study Organic Farming: Status, Issues and Prospects – A Review stated that Organic agriculture has been neglected in the agricultural policy, and therefore there is less government assistance for the promotion of organic agriculture, as it exists for the conventional agriculture in the form of subsidies, agricultural extension services and official research. Given proper encouragement, organic farming will progress tremendously in India,

especially in the dryland regions of the country, taking advantage of the diverse soil and climatic conditions.

Action Village India ,n.d describes about Kerala Gandhi Smaraka Nidhi Thet o promote healthy lifestyles, against a background of increasing concern about pesticide contamination of fruit and vegetables bought in local markets and roadsides, Kerala Gandhi Smaraka Nidhi is working to reviving organic farming practices. Most houses in Kerala are surrounded by a small plot of land with a few coconut trees. They have programmes which aim to show how other crops, such as vegetables, fruit trees and spices can be grown organically in between the coconuts. To encourage more families to join the projects Kerala Gandhi Smaraka Nidhi holds regular training sessions in the villages. Those farmers who are keen to take up models are given expert advice and support.

Conclusion

The section relates the motives of a farmer to pursue the profession of organic farming to the support from Government and Non-Government organizations. The studies suggest that the involvement of external agencies can benefit the farmer as these agencies provide the help of capacity building, expert advice many other techniques which improve farming. It has also been noted than, more than the public sector, the private sector have been involved in the promotion of organic farming among the people.

Section Conclusion

This section consists of the studies relating to the motives of farming in general and organic farming in particular and the studies have been divided on the basis of different factors which act as the motives of farmers as well as women farmers in starting the process of farming and organic farming. The factors include 1) Food Security 2) Environment and Social Responsibility 3) Farming Family background 4) Increased income 5) Healthy living 6) Support from public and private agencies. It has been found that all these factors acts as a motive for the farmers to undertake organic farmers, more studies were found from the sections of food security and the concern of farmers towards environment. Studies from the areas of increased income and the support from the private and public agencies as a motive were found to be comparatively less.

II. Studies relating to challenges faced and coping strategies adopted by organic farmers

Introduction

The section consists of studies articles and reports which relates to the problems faced and the coping strategies adopted by farmers in general and women organic farmers in particular. It has been divided into seven sub sections which include 1) General Challenges faced by an organic farmer 2) Challenges faced by pests and coping strategies adopted 3) Challenges faced by infertile soil and coping strategies adopted 4) Challenges faced by climate change and coping strategies adopted 5) Challenges faced by crop theft and coping strategies adopted 6) Challenges faced by unavailability of time and coping strategies adopted 7) Challenges faced by improper marketing facility and coping strategies adopted.

2.1 Studies on Challenges in general faced by an organic farmer

Introduction

The section focuses on general challenges faced by a farmer In general and an organic farmer in particular. It consists of studies covering the areas of certification, marketability, conflicting expert advertise, lacunae in agricultural policies, seasonality etc. The section consists of studies as well as documents from websites.

Kristiansen, Taji and Reganold, 2006 in their study Organic agriculture: opportunities and challenges stated the challenges to organic farming to be 1) Maintaining sustainability in the global economy: balancing organic principles with commercial imperatives.2)Maintaining flexible organic standards and certification processes to address issues such as: a)nature conservation and regeneration; b)equitable, affordable and flexible access to certification services; c) responsible labour relations and land tenure arrangements; d)animal welfare; e)new inputs such as ‘natural’ biocides, soil amendments and GMOs; and f)incomplete or unscientific basis for including/excluding materials from organic standards. 3) Pursuing international harmonisation of standards and certification. 4) Developing locally applicable agronomic solutions to production constraints, such as weeds, animal health and soil fertility. 5) Expanding research activities in many disciplines (particularly beyond Europe and North America) and foster the integration of knowledge. 6) Preserving food quality while trying to increase productivity. Educating and training at all levels to build capacity, infrastructure and networks. Inadequacies in regulatory and marketing structures (e.g. labelling).7) Excessive

consumer prices and inconsistent quality and availability. Establishing and maintaining credibility and professionalism

Nerju, 2010 in the study *An evaluation of the practice, challenges and benefits of organic farming in rural Kenya : a case study of Nembure Division, Embu west District* stated that high certification fees among 57% of the farmer respondents, labour intensity in double digging (61.7%), conflicting advice on farming techniques (76.7%) and inadequate market incentives for organic produce; constituted the main challenges facing organic farming. Organic farming was found to have helped improve soil fertility and water conservation thus increasing crop production among 83.3% of farmer respondents consequently enhancing food security to 90% of the farmer respondents. Sale of surplus meant improved income to 80% of the farmer respondents. The study therefore considered organic farming to be a feasible production system towards sustainable development.

Reddy, 2010 in the study *Organic Farming: Status, Issues and Prospects – A Review* stated that Organic agriculture has been neglected in the agricultural policy, and therefore there is less government assistance for the promotion of organic agriculture, as it exists for the conventional agriculture in the form of subsidies, agricultural extension services and official research. Given proper encouragement, organic farming will progress tremendously in India, especially in the dryland regions of the country, taking advantage of the diverse soil and climatic conditions.

Narayanan, 2005 in the study *Organic Farming In India: Relevance, Problems and Constraints* states that Despite serious efforts of some NGOs, it appears that India is lagging far behind in the adoption of organic farming. For laying the spadework for the spread of organic agriculture in the country, certain issues require attention at the government policymaking levels. These include (a) substantial financial support by the governments which is absolutely necessary to promote organic farming; (b) market development for the organic products which is a crucial factor to promote domestic sales; (c) government support to the producer and consumer associations to market the organic products; (d) simplification of the process of certification; and (e) reduction in certification cost. A vigorous campaign to highlight the benefits of organic farming against the conventional system is essential to increase awareness of both farmers and consumers

Reddy (1988) in the study *Land Degradation in India: Extent, Costs and Determinants* has pointed out that the modern agriculture is like a cracked earthen pot, which cannot be put to

good use any more. New policies must be able to create the conditions for development based more on locally available resources and local skills and knowledge. Policy makers will have to find ways of establishing dialogues and alliances with other actors so that the farmers' own analyses could be facilitated and their organized needs articulated. Dialogue and interaction would provide a rapid feedback, allowing policies to be adapted alternatively. Agricultural policies could then focus on enabling people and professionals to make use of the most of the available social and biological resources.

Beurteaux, 2018 in the article Female Farmers Struggle to Work and Take Care of Children states that lack of affordable, accessible child care is a problem for many American families, regardless of where they work and live, farm parents can face unique challenges. They live in remote areas, where opportunities to hire help is slim. At the same time, agriculture's extreme seasonality makes scheduling difficult; inconsistent revenues can make regular payments another obstacle. Then there are the cultural factors—including the fact that farming communities tend to be built on an ethos of stubborn self-reliance. Many female farmers struggle with the idea they should be able to do it all, and they feel like failures if they can not.

Conclusion

The section focuses on general challenges faced by a farmer In general and an organic farmer in particular. Many challenges relating the farmers were identified of which majority of the studies cited the absence of marketing facility for the organic products and the weak agricultural policy, not giving stress to organic farming. Some studies also highlighted about the seasonality and seasonal income of farming and the lack of financial support.

2.2 Studies on Challenges faced by pests and coping strategies adopted by an organic farmer

Introduction

The section consists of studies relating to pests as a challenge and the coping strategies used by farmers. The section consists of studies, articles and reports as well. It discusses the impact of usage of pests and various ways of pest management.

Sriraj, 2015 in his article Challenges organic farming faces described that one of the foremost challenges is the rampant use of pesticides and chemicals for weeds. This has caused an evolution of the pest and weeds species and thereby, made them increasingly immune to

chemicals. This is the first hurdle in the transition from conventional farming to organic farming. As organic farming prohibits synthetic pesticides, the vulnerable farmer is at the mercy of severe attacks from mutant pests. The situation becomes worse not only with the discovery of newer variants of pests and diseases that are reported but also because of the traditional methods of pest control that fail to contain the damage to the crops. Severe lack of suitable infrastructure is proving to be the Achilles' heel for organic farming and its produce. Maximum organic farming consists of fruit and vegetable production, which is highly perishable by nature. Added to this, an overall improvement in road, storage and transportation infrastructure across the country can enable organic produce to reach markets on time thereby helping the consumers appreciate the value of fresh and chemical free organic food.

Folnovic, 2016 in her article Best Practices for Pest Management in Organic Farm Production writes that Farmers are faced with myriad of production challenges where the most common problems are pests, which include insects, diseases, and weeds. They integrate cultural, biological, mechanical, physical and chemical practices to manage pests. Cultural practices – Those can be achieved with practices such as crop isolation, mixed cropping, and crop rotation. The timing of sowing and planting can be used to allow young plants to establish to a tolerant stage before an attack occurs and to reduce the susceptible period of attack. Mechanical and physical control - include tillage, mowing, cutting, mulching and organic soil coverage and barriers. Biological control – biological control in organic plant protection is a method of controlling insect pests and diseases using other organisms which rely on predation, parasitism and herbivory, or some other natural mechanisms with active farmer's management interaction. Natural enemies of insect pests, known as biological control agents, are predators, parasitoids and pathogens. Chemical control - organic standards are designed to allow the use of naturally occurring substances such as pyrethrin and rotenone. Farmers avoid the use of broad-spectrum synthetic pesticides, which severely disrupt natural control and promote the occurrence of secondary pests such as spider mites, brown planthoppers and Rhizoctonia. There are also few synthetic substances allowed in organic farming, such as fixed coppers, hydrated lime, hydrogen peroxide, lime sulphur, and potassium bicarbonate.

Home ,2007 in the report Pest Management for Organic Agriculture states that Organic crops may also be treated with pesticides within the guidelines of the various associations, but in general these are less potent and shorter residual. Where broad-spectrum insecticides are used (organic or conventional) then effects on non-target organisms means that diversity is

lowered. When beneficial insects are killed, then the result is that pest control becomes even more reliant on further applications of pesticide. Methods to enhance populations of beneficial species include: • Habitat Manipulation • Complexity associated with stability – Structure of habitat • Rotation, Planting sequence, • Irrigation, soil management • Cover crops, inter-planting, • Nectar sources Pest species may be either native or exotic.

Conclusion

The section consists of studies relating to pests as a challenge and the coping strategies used by farmers. The studies describe the problem of pest its variants have increased because of pesticide and the usage of inorganic pesticides has been directly related to the problem of increasing pests. Various organic control measures can be used to reduce it and it is considered as the best form of resistance, even though there is evidence of organically accepted synthetic pesticides.

2.3 Studies on Challenges faced by infertile soil and coping strategies adopted by an organic farmer

Introduction

The section consists of studies which relate to the challenges faced by soil fertility and the coping strategies adopted by farmers. The particular section consists of studies as well as articles which relates to the topic. The studies in this section specifically focuses on the importance of soil fertility, soil fertility as a motivating factor for farming, soil fertility reduction due to chemicals, usage of manure and bio fertilizers as organic fertilizers fertilizer and effective use of organic fertilizers.

Pimentel et al, 2005 in the study Update on the Environmental and Economic Costs Associated with Alien-Invasive Species in the United States stated that soil health and soil fertility are two major motivating factors for farmers which makes them switch to organic farming and sustainable agricultural practices. Agriculture, depending on uncontrolled use of fertilizers and other chemicals are causing serious effects on public and environment

Pimentel and Greiner, 1997 in the book section Environmental and socioeconomic costs of pesticidal use states that usage of chemicals on the agricultural land is reducing the soil fertility and in succeeding crop seasons farmers are forced to use more of chemicals to get the same yield as received before. Farmers use the chemical inputs since they are getting the high yields. But the negative impacts are equally important to be considered. Continuous use of

chemical inputs such as pesticides and fertilizers have caused damage to the environment, human ill health, negatively impacted agricultural health and caused problems to the environment and agricultural sustainability.(Pimentel et al 1992;

Sharma and Kaur, 2013 in their study In Depth Adoption of Organic Farming Practices by Tribal Women state that in the face of these agricultural and food production challenges, organic farming provides viable methods of maintaining and building healthy soil. Organic farming rely on crop rotations, crop residues, animal manures, legumes, green manures, off farm organic wastes, and aspects of biological pest control to maintain soil productivity and tilt, to support plant nutrient and to control insects, weeds and other pests. Vermicomposting was found to high extent of adoption. Compost was found to be under medium level of adoption. Mulching was found to high extent of adoption. Green manuring reflecting medium extent of adoption. Liquid manure reflection medium extent of adoption. River bed soil reflecting medium extent of adoption of respondents are found to be adopters.

Ecochem n.d in their article Manure is and Excellent fertilizer suggested that untreated manure is simply animal faeces while properly treated/processed manure is a value added marketable organic residual. Technological factors involved in manure treatment systems have a significant influence on by-product quality and it is the quality that dictates the value. Manure is an excellent fertilizer containing nitrogen, phosphorus, potassium and other nutrients. It also adds organic matter to the soil which may improve soil structure, aeration, soil moisture-holding capacity, and water infiltration. Manure is a source of many nutrients including: nitrogen, phosphorus, potassium and many others. However, nitrogen is often the main nutrient of concern for most crops. Potassium deficiency is usually quite localized within a field and would not be corrected with common rates of manure.

International Atomic Energy Agency n.d , in their article states that soil fertility can be further improved by incorporating cover crops that add organic matter to the soil, which leads to improved soil structure and promotes a healthy, fertile soil; by using green manure or growing legumes to fix nitrogen from the air through the process of biological nitrogen fixation; by micro-dose fertilizer applications, to replenish losses through plant uptake and other processes; and by minimizing losses through leaching below the crop rooting zone by improved water and nutrient application.

Raimi, Adeleke and Roopnarain , 2017 in their study Soil fertility challenges and Biofertiliser as a viable alternative for increasing smallholder farmer crop productivity in sub-Saharan

Africa stated that low fertility and inefficient management of sub-Saharan African soils have been the major challenges facing productivity among smallholder farmers. Unfortunately, inorganic fertiliser used as major soil nutrient management is unsustainable, causing soil degradation and environmental pollution. Therefore, smallholder farmers may only realise their maximum potential if a more sustainable, low-cost and efficient integrated nutrient management system compatible with their socioeconomic status is practised. Currently, the increasing demand for sustainable agriculture is driving the use of biological fertilisers, which are composed of beneficial microorganisms; ranging from bacteria to blue-green algae and fungi. They improve plant nutrition and yield through biological nitrogen fixation, nutrient solubilisation, biocontrol activities and production of plant growth promoting substances.

Wander, 2015 in the article Soil Fertility in Organic Farming Systems: Much More than Plant Nutrition writes in organic farming systems, soil fertility means more than just providing plants with macro- and micronutrients. Effective fertility management considers plants, soil organic matter (SOM), and soil biology. Ideally, organic farming systems are designed to enhance soil fertility to achieve multiple goals. Important goals include: the protection and, if possible, improvement of soil physical condition so that the soil supports healthy plants and soil-dwelling organisms and has the ability to resist and recover from stresses like flooding or aggressive tillage; the maintenance of soil buffering capacity to minimize environmental degradation caused by soil loss or soils' failure to filter nutrients or degrade harmful compounds; and increased water and nutrient use efficiency by increasing biological fixation and retention of needed nutrients while reducing their loss from the system to the extent possible. Organic farming systems are designed with the aim of maintaining nutrients in organic reservoirs or in bioavailable mineral forms instead of just supplying nutrients through frequent fertilizer additions. This is achieved by cycling nutrients through organic reservoirs. Soil fertility is improved by organic matter management and not through input substitution.

Conclusion

The section consists of studies which relate to the challenges faced by soil fertility and the coping strategies adopted by farmers. Soil fertility is considered as a motive to organic farming and plays a vital role in the agricultural practices. It has been found in many studies that, usage of inorganic fertilizers leads to loss of soil fertility and there are alternative organic fertilizers like vermi-compost and organic manure which can be used effectively. All

the studies are in favour of the usage of organic way of fertilizing the soil which results in good yield.

2.4 Studies on Challenges faced by climate change and coping strategies adopted by an organic farmer

Introduction

The section consists of studies which relates to the problem of climate change and the coping strategies used by the farmers. It consists of literature from study and articles and mainly focuses on the way in which the climatic change affects the agriculture and the collective actions required to tackle it.

Ramsundar ,2017 in his article Biggest Problems Faced By Indian Farmers And Technological Solutions Available describes some problems to be fragmented land holdings , where majority of the Indian farmers have very little land holdings 2)Gamble of Monsoon- It plays two extreme part, at times of rains , its like flooding and when it does not rain , there comes the problem of draught.3) Global Warming- causes climate change in rapid and different ways which lead to the problem loss of yield and pest attack.

Dev, 2012 in the study Small Farmers in India: Challenges and Opportunities states that the impact of climate change: Climate change is a major challenge for agriculture, food security and rural livelihoods for millions of people including the poor in India. Adverse impact will be more on small holding farmers. Climate change is expected to have adverse impact on the living conditions of farmers, fishers and forest-dependent people who are already vulnerable and food insecure. Rural communities, particularly those living in already fragile environments, face an immediate and ever-growing risk of increased crop failure, loss of livestock, and reduced availability of marine, aquaculture and forest products. They would have adverse effects on food security and livelihoods of small farmers in particular. In order to have climate change sensitive and pro-poor policies, there is a need to focus on small farmers. Agriculture adaptation and mitigation could provide benefits for small farmers. The coping strategies would be useful to have long term adaptation strategies. There is a significant potential for small farmers to sequester soil carbon if appropriate policy reforms are implemented. The importance of collective action in climate change adaptation and mitigation is recognized. Research and practice have shown that collective action institutions are very important for technology transfer in agriculture and natural resource management among small holders and resource dependent communities.

Nidhi, n.d in the research Role of female labour in farming sector: a study of state of Sikkim states that agriculture not only in India, but world over especially in developing countries, depends on monsoon, because in these countries irrigation facilities are not fully developed. In case monsoon fails or it rains heavily untimely, it ruins the agricultural production. Agriculture has become a gamble not only for monsoon but also for temperature now- a-days. With increase in temperature than what a particular crop requires, it affects negatively the productivity of that crop. The present insurance system in India also does not cater much for any loss of crop failure due to any unfavourable and unavoidable climatic conditions or pest epidemics. Small farmers who have taken loans to raise the crops come under heavy debts in such situations and if this situation prolongs for many years it further forces the poor farmers to starve and sometimes this leads to suicides by aggrieved farmers as reported in Maharashtra and Andhra Pradesh

Conclusion

The section consists of studies which relates to the problem of problem of climate change and the coping strategies used by the farmers. From the section it is understood that the change in weather and the rise in temperature (Global warming) causes major causes to crop yield and the possible measures are all available at the macro level as the phenomenon is a macro one.

2.5 Studies on Challenges faced by crop theft and coping strategies adopted by an organic farmer

Introduction

The section consists of articles from websites and newspaper reports which indicates the problem of crop theft and the ways to cope with it. The newspaper report describes the plight of a farmer after being robbed and the article describes about the natural measures to be taken to cope with it.

Luymes, 2017 in the newspaper The Columnist reported in the article - Crop theft a growing concern for some farmers reported the crop theft has long been an issue for farmers, and evidence suggests the problem may be growing like a weed in places where urban development is encroaching on agricultural land. Most of the problems are along the rural-urban interface, where roads and trails run beside or through farmers' fields. Passersby may only steal a bucket of blueberries or a perfect pumpkin

The Telegraph , 2016 in the article 10 ways to deter garden thieves suggest some solutions to crop theft which include 1)Does not plant tall trees or shrubs around a garden gate; this provides cover for thieves.2) Use's Nature's defences: thorny hedges of holly, berberis, hawthorn, pyracantha and blackthorn.3).Install a gravel drive; you can hear footsteps a long way off.

Conclusion

The section consists of articles from websites and newspaper reports which indicates the problem of crop theft and the ways to cope with it. Both the content of literature is in the foreign context and not many studies in the Indian Context regarding crop theft were found.

2.6 Studies on Challenges faced by unavailability of time and coping strategies adopted by an organic farmer.

Introduction

The section consists of two articles describing the problem of work load and time management and the ways to cope with it. The study focuses on rural women in agriculture.

Winder 2018, in the article Women in Agriculture: Challenges and Options states that rural women in Latin American and the Caribbean (LAC) are responsible for the production of approximately 45% of the food consumed by rural households in the region. Additional to their role as producers, rural women in LAC, and similarly to what happen in other regions of the world, have other important roles as they serve as marketers of surpluses, administrators of the home, healers, counselors, community leaders, mothers and wives. Additional to the challenges natural to their multiplicity of roles and responsibilities, rural women in LAC confront other obstacles that limit their development and prevent the full expression of their productive capacity. One of the most important challenges is the access to education, an example of this comes from Guatemala, where more than 60% of rural women dedicated to agriculture cannot read or write. Other issues that limit the development of women in the rural areas are inequality in labour conditions and access to work opportunities; limited access to productive inputs, particularly to land ownership; and insufficient credit. All of these has resulted in increased migration to urban areas, particularly by young women, where they become prone to exploitation and in several cases to new forms of slavery.

Reddy, n.d in the article Time Management for Working Women: 14 Tips and Secrets also suggests some steps in her article to on time management for working women , which includes 1) To rise early , which helps in planning the way the day should go 2) Involve in multi-tasking-that is to do different tasks together in order to save time 3)Pre-planning: Pre arranging the next day before going to bed or resting helps in having a clear idea and plan.4)Ask for help: Asking for help at the time of need is also required like from the family members.

Conclusion

The literature states that of the women, the rural women have been facing a lot of problem in managing both professional and personal life. There were not much literature available with the time management problem of Indian farmers.

2.7 Studies on Challenges faced by Inappropriate marketing facility and coping strategies adopted by an organic farmer

Introduction

The section consists of studies relating to challenges faced by inappropriate marketing facility and coping strategies adopted by an organic farmer. It consists of studies and reports and it focuses on the challenges faced by the organic farmers, factors depending the market access of the organic farmer and types of market available for an organic farmer.

Watness 2014 in the study The Benefits and Challenges of Organic Farming stated the challenges of organic farming1)Mainstream consumers have standards for quality that are difficult for organic growers to meet Organic growers have higher rates of unmarketable blemished product and that limits sales revenue.2)Profitability is low because food prices are low and land is expensive Despite increase exposure small farms have gained in recent years, the reality is that most are still not profitable businesses.3) Farming organically on an industrial scale is difficult. Many organic crops are grown in monocultures, like conventional crops, but use organically registered pesticides and fertilizers. It is common for organic growers to spray pesticides even more frequently than their conventional counterparts to keep up with insect and disease pressure. Organic methods are much more effective on a small scale than on the industrial level.4) Organic certification is exclusive: Many small farmers do not justify the expense for organic certification. Some use methods that are very well suited for their production and environment, but still do not qualify for the organic label.

Singh,2006 in the study Organic cotton supply chains and small producers: Governance, participation and strategies states that market access for small producers depends on (a) understanding the markets, (b) organization of the firm or operations, (c) communication and transport links, and (d) an appropriate policy, environment. In this changing scenario, small farmers mainly need better access to capital and education. Management capacity, which is as important as physical capital, is the most difficult thing to provide. Further, collective action to deal with scale requirements needs to be designed in order to satisfy new product and process standards or to avoid exclusion from the supply chain. Collective action through cooperatives or associations is important to be able to buy and sell at a better price and also to help small farmers in adapting new patterns and facing much greater levels of competition. Small farmers require professional training in marketing as well as in the technical aspects of production. There is also a need to strengthen small farmer organizations and provide them with technical assistance to increase productivity for the cost-competitive market and to provide help in improving the quality of produce in order to capture value addition in the supply chain.

IFOAM n.d in their report stated the following challenges in marketing for the organic products 1)Limited expertise in marketing. 2) Supermarket challenging - pricing, variety, global trends. 3) Organic suppliers being smaller than conventional ones, wholesalers tend to discontinue slow moving items - continuous disruptive supply. 4) No labelling laws exist in the country. 5) Influx of pseudo-organic and "organic claims" (and a lack of regulations from government bodies) 6) Competition is tough from unscrupulous competitors. No cooperation among operators. Product (quality) development: 7) Lack of confidence in organic farming on the part of the farmer. 8) Supply growing faster than the demand.

Sitthisuntikul,Yossuck and Limnirankul ,2018 in their study How does organic agriculture contribute to food security of small land holders?: A case study in the North of Thailand found that their organic products were distributed through four types of small market places: (1) at home direct sell to customers inside and outside villages who came to buy organic products at a house of small land holders, (2) local market—a particular market place inside community for selling general goods, , (3) organic network market—a particular market place outside community for selling organic products which organic network in an area managed to select organic sellers according to particular criteria (4) alternative markets—direct sell to other market places.

Conclusion

The section consists of studies relating to challenges faced by inappropriate marketing facility and coping strategies adopted by an organic farmer. Literature suggests that the profit is very less in organic farming when compared to conventional farming. The factors depending the market access of the organic farmer were described to be appropriate policy environment

Section Conclusion

The section consists of studies articles and reports which relates to the problems faced and the coping strategies adopted by farmers in general and women organic farmers in particular. It has been divided into seven sub sections which include 1) General Challenges faced by an organic farmer 2) Challenges faced by pests and coping strategies adopted 3) Challenges faced by infertile soil and coping strategies adopted 4) Challenges faced by climate change and coping strategies adopted 5) Challenges faced by crop theft and coping strategies adopted 6) Challenges faced by unavailability of time and coping strategies adopted 7) Challenges faced by improper marketing facility and coping strategies adopted. Many studies have been found from the area of infertility of soil, climate change and marketing facilities. There were not many studies linked to the problem of crop theft and unavailability of time when compared to the other factors.

III. Studies relating to the impact of Organic farming in the lives of farmers

Introduction

The studies in this section have been divided into three sub section which includes 1) Studies relating to organic farming and its social impact 2) Studies relating to Organic farming and its economic impact 3) Studies relating to organic farming and its health impact.

3.1 Studies Relating to the Social Impact

Rigby et al, 2001 in their study Constructing a Farm Level Indicator of Sustainable Agricultural Practice states that several factors influence the farmers to switch from conventional farming to organic farming. People believe that switching to organic farming and related crop protection techniques will give them a better status in the society. They wanted to be known as someone who has immense care for land and soil. Farmers are influenced by social concerns and moral concerns than the monetary benefits.

According to M.S.Swaminathan Research Foundation , 2017 it has awarded the Karshakashree Award that recognizes an outstanding Kerala farmer has been awarded to a woman farmer from Palakkad. The awardee had been recognized for her work in organic farming, efficient use of land and natural resources. This award is an important method to promote and applaud achievers in agriculture. It increases the social acceptance and reputation of the farmer.

Kent, 2017 in her article The Benefits of Urban Agriculture on Psychological Health suggests that social engagement is positively correlated with personal attention to health care and wellness.

3.2 Studies Relating to the Economic Impact

International Federation of Organic Agricultural Movements (IFOAM) in their study Impacts Associated With the uptake of Organic Agriculture in East Africa states that according to many farmers' experiences on the ground, Organic Agriculture is benefiting Rwandan small-scale farmers as it was found to be more affordable and profitable than chemical agriculture. This improved agriculture has, moreover, provided economic and agricultural benefits such as easy use of inexpensive organic fertilizers, top quality and quantity of the harvest, as well as improving the capacity of resilience against the effects of Climate Change. Many farmers look at organic farming as the best way to increase the ability of the farming system to continue functioning when faced with the adverse effects of climate change. Organic practices such as cover crops, crop residue retention, mulching, green manure and composting make farming more drought-repellent and more resilient to extreme events.

IFAD,2002 in their report Rural Poverty Report 2001 - The Challenge of Ending Rural Poverty stated that in Latin America and the Caribbean (2003) reveals that organic agriculture has benefited smallholders the most. More importantly, studies show that organic agriculture has been particularly profitable for smallholders. In five out of the six countries covered by the study, small farmers dominated organic production for export as well as domestic markets. In Mexico in 2000, smallholders represented 98.6% of all organic producers, accounting for 84.2% of the area under organic production and generating 68.8% of the exports of organic products. It has been argued that since organic agriculture is labor intensive, it could empower women by providing them with more earning opportunities. IFAD's study (2005b) on organic agriculture in People's Republic of China (PRC) shows that women in Jianxi province expressed that the ability to earn in organic agriculture provided

them with a greater feeling of worth for their contribution. In many organic agriculture certification bodies in Asia, women are preferred as farm inspectors, thus expanding employment opportunities for women.

Setboonsarng, et al., 2005 Contract Farming and Poverty Reduction: the Case of Organic Rice Contract Farming in Thailand -on organic rice contract farming likewise finds that small organic farms are more profitable and efficient than larger farms, and that in general, organic rice contract farming is more profitable than conventional non-contract farming by a significant margin for all scales of operation, even when the non-cash costs are included.

NDTV n.d in an article “How a Woman Farmer Proved Organic Farming is More Profitable” presented case of a women farmer who had increase her production, productivity of land as well as the income from farming by shifting to the organic cultivation. Earlier there was the need of buying pesticides and fertilisers from the market, but after using the bio fertilizers and vermicomposting she is able to prepare the manures herself, from the ingredients in the field, which result in the reduction of expenditure. Earlier she used to spend Rs.15, 000 per acre, which has now been cut down to Rs.6, 000 per acre. There were also cyclones in the area, when other crops could not withstand it, the ones in her field were repellent to the effects of cyclone.

3.3 Studies Relating to the Health Impact

Kent, 2017 in her article The Benefits of Urban Agriculture on Psychological Health suggests that working with plants and in the outdoors, benefits the mental health, mental outlook, and personal wellness of individuals. The cultivation of plants triggers both illness prevention and healing responses. Health professionals use plants and gardening materials to help patients of diverse ages with mental illness improve social skills, self-esteem, and use of leisure time. The field of horticulture therapy promotes plant-human relationships to induce relaxation, and reduce stress, fear and anger, blood pressure, and muscle tension. Significant research shows that natural scenes evoke positive emotions, facilitate cognitive functioning, and promote recovery from mental fatigue for people who are in good mental health. Farming is a lifetime activity affiliated with satisfying labour, physical and mental relaxations, socializing and a means to produce food. For that reason, urban agriculture can be a key element in successful health intervention programs because it addresses simultaneously the physical, mental, spiritual, and social health of individuals and their communities. Food production through urban agriculture teaches job skills and offers entrepreneurial

opportunities. Inventive prison garden programs seek to improve personal health and mental outlook through pride in nurturing the life of a garden.

Bellows, n.d in the report Health Benefits of Urban Agriculture states that research shows that gardening is a preferred form of exercise across age, gender, and ethnicity. Overall, older persons do more gardening than younger ones. Even moderate forms of garden exercise increase muscle strength and endurance in activity-reduced persons including pregnant women, cancer survivors, and those generally sedentary. Working with plants and being in the outdoors trigger both illness prevention and healing responses. Cultivation activities trigger both illness prevention and healing responses. Health professionals use plants and gardening materials to help patients of diverse ages with mental illness improve social skills, self-esteem, and use of leisure time. Horticulture therapy promotes plant-human relationships to induce relaxation and to reduce stress, fear and anger, blood pressure, and muscle tension

Mayer and Frantz (2005) in the study The Connectedness to Nature Scale: A Measure of Individuals' Feeling in Community with Nature considered that opportunities to connect with nature in childhood promote the value of green spaces for refuge from stress and anxiety. Gardeners report that garden activity increases self-esteem, pride, confidence, personal satisfaction, and efficacy. Even moderate forms of garden exercise can increase muscle strength and endurance in activity-reduced individuals. From a research study in 2003, researchers Kien and Chiodo found gardening and nature adventure education in after-school programs increased energy expenditures of 12-year-olds by 60%.

National Agricultural Development Company (NADEC), n.d, in their article Importance and benefits of physical activity states some benefits of physical activity , which includes 1) Increased endurance, muscle strength and flexibility thus decreased back pain 2) Reduced risks of certain cancers, including colon and breast cancer 3) Greater bone density and lessened risk of adult bone loss later in life known as osteoporosis 4) Improved resistance to infectious diseases and faster wound healing 5) Reduced body fat, increased lean tissue consequently stronger self-image 6) Improved sleeping patterns 7) Reduced menstrual symptoms, anxiety and symptoms of depression 8) Enhanced mental and cognitive functioning 9) Longer and higher quality of life.

Conclusion

The section consists of studies which deal with the social, economic and health impact of organic farming in the life of farmer. It has been understood that all these spheres are

positively affected by pursuing the profession, but there has not been much literature which indicates the connection between the social impacts of organic farming.

2.3 Conclusion to the chapter and Literature Gap

The literature review consists of studies and articles divided into three sections 1) Studies on the motives to farming and organic farming 2) Challenges faced by people indulging in the farming and organic farming process 3) Impacts of farming and organic farming. After reviewing the literature, various motives to organic farming were understood and majority of the studies were from the area of food security. When it comes to the challenges, the problem of crop theft and unavailability of time were not highlighted by the studies. In case of the impact of organic farming, there was very less mention to the impact of organic farming on the social life of a women organic farmer. It was also understood that even though there were many studies carried specifically on the topics of motives, challenges and impact, no study was found to have all these important factors taken together in account. Also no such study has been found among the women farmers in Thiruvananthapuram area. Thus this study fills the literature gap of understanding the motives, challenges and impact of organic farming on women organic farmers in Thiruvananthapuram.

Chapter III
Research Methodology

3. RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter details out the research methodology for the present study. It explains the research questions and a suitable methodology to answer those questions. The chapter will cover the research design, pilot study, universe and unit of the study, sampling design, the sources of data, the data collection instrument and how the data will be analyzed and interpreted to arrive at certain findings, suggestions and conclusions based on the study.

The study tries to describe the motives, challenges and impact of organic farming on women organic farmers in Thiruvananthapuram District, Kerala. The research questions has demanded for a Case Study design trying to have an inquest on the motives of the farmers to start organic farming, Challenges faced by farmers after engaging into the process and the impact of farming on the women farmers life.

3.2 TITLE OF THE STUDY

“Women Farmers and Organic Farming: Case Study.”

3.3 RESEARCH DESIGN

Case study Design. A case study is about a person, group, or situation that has been studied over time. If the case study for instance, is about a group, it describes the behavior of the group as a whole, not behavior of each individual in the group. Basically, a case study is an in depth study of a particular situation rather than a sweeping statistical survey. It is a method used to narrow down a very broad field of research into one easily researchable topic

3.4 PILOT STUDY

A pilot study is a small scale replica of the main study. It is a rehearsal of the main study. Researcher conducted the pilot study by visiting a women organic farmer in Kovalam and interacted with her. During the pilot study researcher assessed the feasibility of the study, co-operation from the respondent and finally modified the research questions. From the pilot study researcher understood the feasibility of the study.

3.5 SETTING OF THE STUDY

Setting refers to the physical locations and conditions in which data collection took place. The present study was conducted from the data and information available from Thanal, a Non

Governmental Organization working in the field of organic farming, climate action and preservation of environment. The women organic farmers are the residents of Thiruvananthapuram districts and they sell their organic produce to Thanal .

3.6 SAMPLING STRATEGY

The cases were selected based on purposive sampling. The population of the study includes women organic farmers who have been practicing organic farming. In the study, a total sample of 5 women organic farmers from Thiruvananthapuram District was used.

3.7 UNIT OF STUDY

The unit of this study is a women organic farmer in Thiruvananthapuram District.

3.8 DEFINITION OF THE CONCEPT

Operational and Conceptual Definition

The variables in the present study are motives of engagement of women in organic farming, Challenges faced by them in organic farming and the social, economic and health impact of organic farming on the lives of women.

Conceptual Definitions

1. **Organic Farming** : Organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection. (United States Agricultural Department,USDA,n.d)
2. **Motives**: Motive is generally defined as the physiological or psychological arousal which influences how we behave. For Example, a physiological arousal, such as hunger or thirst, motivates us to eat or get something drink (Eruptingmind,n.d)
3. **Challenge**: A challenge is something new and difficult which requires great effort and determination. (Collins English Dictionary, n.d)
4. **Coping Strategies**: Coping strategies refer to the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce, or minimize stressful events.(Taylor,1998)

5. **Social Impact** : It is defined as the effect of an activity on the social fabric of the community and well-being of the individuals and families.(Business Dictionary, n.d)
6. **Economic Impact** : It is defined as a financial effect that something, especially something new, has on a situation or person (Cambridge Dictionary ,n.d)
7. **Health Impact:** It is defined as the strong effect of something, especially something new has on an individual or a community's health.

Operational Definitions

1. **Organic farming** :In the study the organic farming refers to a system which avoids or largely excludes the use of synthetic inputs and depends on biological system of nutrient mobilization and plant protection ,practiced by the women organic farmers of Thiruvananthapuram region”.
2. **Motives:** In the study motives are defined as the factors which has influenced or motivated the women organic farmers to start organic farming.
3. **Challenge:** Challenge is defined as any difficult situation faced by the women organic farmers in the process of organic farming.
4. **Coping Strategies: In the study** Coping strategies refer to the specific efforts, taken by the women organic farmers to tolerate, minimize and reduce the challenges faced by them.
5. **Social Impact:** It is defined as the effect of organic farming on the social fabric of the community and well-being of the women organic farmers and families.
6. **Economic Impact:** It is defined as the financial effect that organic farming, has on the women organic farmer.
7. **Health Impact:** It is defined as the effect of organic farming on the health of women organic farmers as well as their families.

3.9 SOURCES OF DATA

Primary Data

The primary data for the study was collected from the women organic farmers enrolled in Thanal. The list of foster care families was collected from the Non-Government Organization, Thanal.

Secondary data

The secondary data was collected from case records, news paper articles and through interacting with experts.

3.10 TOOLS FOR DATA COLLECTION

Semi-structure Interview guide was the tool used for data collection. The interview guide was prepared based on the research questions of the study

3.11 PRE TEST

Tool used for the study was semi-structured interview guide. Researcher first had an unstructured interview with a respondent and based on the response of the respondents and observation of researcher a semi-structured interview guide was prepared.

3.12 DATA ANALYSIS & INTERPRETATION

Data analysis was done based on the research questions. They are:

- What is the impact of individual organic farming initiatives on the lives of women farmers?
- What are the motives of engagement of women in organic farming?
- What are the challenges faced by the women farmers and coping strategies adopted while engaging with organic farming?
- What are the social, economic and health impact of organic farming on the lives of women farmers?

3.13 CHAPTERIZATION

The study is divided into Five Chapters,

Chapter I: Deal with the introduction, it consists of introduction to the various concepts related to the study and it also gives a brief introduction about the problem to be addressed in the study.

Chapter II: Deals with the review of literature carried out, during the course of study. It analyses the previous studies conducted by various researchers.

Chapter III: Concerned with the Research methodology part of the study. It includes all the aspects of the research. It includes statement of the problem, aim of the study, scope of study,

significance of study, objective of study, research design, sampling technique, methods of data collection, and tools of data collection, data analysis, and limitations of the study, operational definitions and chapterization

Chapter IV: Concerned with the case presentation, analysis and interpretation of the data collected for the study.

Chapter V: Concerned with discussion on the data collected for the study.

Chapter VI: Highlight the findings and suggestions.

Chapter VII: Concerned with the Conclusion made by the researcher.

The final part of the research dissertation consists the bibliography and appendix which includes tool used for data collection in the study

3.14 LIMITATIONS OF THE STUDY

The limitations of the study that influenced the interpretation of the results of the study are as follows:

- Since, four of the cases are also employed in other professions and are not full time farmers. So the study will have the limitation of contents, when it comes to the case of a full time farmer.
- The literature reviews consists of a mixture of studies which belongs to conventional farming as well as organic farming process and not exclusively organic farming process.

Chapter IV
Case Presentation

4. Case Presentation

4.1 Introduction

The chapter presents the cases of five women organic farmers and they have been named as A, B, C, V and Z. The case presentation gives a detailed description of the women organic farmer's motives to pursue organic farming, the challenges they had faced and coping strategies adopted while pursuing it and the impact the particular farming had in various spheres of their lives.

4.2 Case A

Case A is a 45-year-old woman and lives with her family which consists of her parents, husband and two children. They have 30 cents of land and have been doing farming in 15 cents out of that and the terrace as well. The woman also runs a driving school also, thus the rest of the space around the house has been used to create a ground for the driving school. She had begun with farming in the beginning around 18 years ago and then shifted to driving. The woman farmer had an affiliation towards nature as before marriage her family had the business of Anthurium orchid, which she had also practiced in her present house after marriage. The case began farming when, she got some seeds from the weekly magazines for free. The seeds grew up and then she started planting more and more. Afterwards, people started noticing the number of crops increasing and the case got information on Thanal from some of the acquaintance. She herself approached Thanal. The director of the institution affirmed to take the vegetables, once it was checked. The team from the institution came and inspected the vegetables and then it was approved to be produced through organic techniques. She was asked to give left over vegetables after being used for the consumption of the family. Both the Anthurium and vegetable farming were done together and the latter was found to be more profitable and thus she shifted to it.

She describes farming to be very helpful in relieving stress as she compares the vegetables to be her children. In the morning she goes near and then talks to them, watering them and putting in manure etc. The case used cow dung as well as vermi compost. The instances of loss were comparatively less, when compared to the big farmers as they suffered huge loss when it came to the diseases affected many number of crops in large area. She never felt any factor pulling her back from the farming. The women organic farmer explains that, she has been doing it as she was in constant need of an income for her family. There was always a

constant need, which lead her to the work. Stitching is other business which she has been into, which she had learnt herself. Her husband and other family members have been constantly supporting her emotionally and well as physically. She believes that every woman can work, but they do not do it as they are lazy and beauty conscious.

The farmer explains that the farming has been an integral part of her life and if it was not there, her life would have been very boring and lifeless. Diseases would have affected her by this age. Gandhi Smarka Nidhi, an organization also working in the field of farming have been helping these farmers by providing rewards and other assistance. And the Case A had consistently won the award for best farmer for some years in the past.

She explains the use of chemical fertilisers to be very lethal, the shopkeepers are in a way killing the others and making money. The farmer explains that the vegetables affected by germs are the best ones as they do not contain pesticide and are good to eat as well the fishes on which the flies come are good to be consumed.

Farming has become a part of her life and she has been getting constant support from Thanal, Gandhi Smaraka Nidhi as well as Krishi Bhavan . And from the family her husband as well as her father, the daughter has also won budding farmers award. Her day starts at 4 in the morning and sometimes if there is more work at 2. Prepares food for the family with the help of her mother. On an average she sleeps 5-6 hours and takes rest in between her work i.e. at noon after the driving classes. She justifies the lack of sleep with the , amount of work she is having and that she never lets away any work coming by her side, may it be stitching , driving or farming. She has driving class at 6:30 am and it sometimes continues till the noon. Then she haves the lunch from her home itself and later again the driving classes are there from 2:30 pm, there are also evening classes for driving in the ground in the compound.

‘A’ describes it to be difficult to do both driving and Farming together as , while farming she need to change the clothes and use the ones for the purpose and cannot afford to use the same during the driving classes. This causes difficulty and she is optimistic of farming once the rush of the students for driving decreases. About the certification and the market of organic farming products, she is very positive and says that it’s good for health as well as very cost effective. ‘A’ will be shortly receiving the certificate for organic farming from the state authorities. She uses her experience of being in the field of organic farming while choosing the vegetables and fruits. ‘A’ describes that the children are affected by the poison of the pesticide at the highest level as, they consume most of the fruits brought in the home. The

remedy she suggests is to opt for organic food and also to use techniques like boiling, adding turmeric before consumption of fruits in order to reduce the ill effects. The demand for organic food has been increasing in Kerala as most of the people are suffering from diseases. 'A' says that, the main problem causing vegetables are chilli and coriander leaves.

Presently there is cultivation of passion fruit, spinach and yam, but six months before there were much more. The main water resource for farming is from the well in the compound, and the other materials like growbags are brought by herself. Cow dung manure is also brought and one load is used for 6 months. Other manure are like the very compost, excreta of hens, bone powder etc. She mentions that, there is very less time to approach the Krishi bhavan and understand the schemes. 'A' has not been receiving much benefits or incentives from the Government and is not much aware of the schemes. Even the manure given Krishi Bhavan consists of chemical fertiliser. She describes the process of farming to be fully profitable and says that, in no way there is loss as it is cultivated in a small amount of land. 'A' take the vegetables for family consumption and gives the rest to Thanal and receives a good amount as income.

The geography of the soil is not very much supportive of farming, thus 'A' leaves the soil uncultivated for some time in order for the nutrient restoration. The weather these days have not been so good. There is different time for harvesting for different crops as the cropping pattern is very much different. She is not a part of any Self Help Groups and does not advocate its participation as there are a lot of quarrels happening there and nothing much productive. Even though she have not heard about the concept of integrated farming, 'A' have been practicing it by the use of excreta of hens as manure to crops.

4.3 Case B

'B' is a woman from the elderly category of age 60. She lives with her husband and grandson. She does farming on 40 scents of land as well as on top of the house. The crops include yam, banana, tapioca etc. She started farming in 2008, in a smaller scale with inspiration from the Panchayat member of her ward. The officials from Gandhi Smaraka Nidhi were instrumental in her farming journey, as one of the official had formed a group for agricultural activities in her place and most of B's family members were in that group. B's brother was in the forest department and used to bring the seeds for planting. But in the beginning they could not find a market to sell the crops, which came in excess.' B 'herself went out in search of buyers, but they refused as they bought it from Chalai market , i.e.

mainly the vegetables from Tamil Nadu , grown out of chemical fertilizers. Then she went back to a guy who had helped her in setting up the farming initially, he suggested about the organization Thanal, which took the organically grown crops.

She then approached the organization and then, after inspection her vegetables were taken in. 'B' was always interested in farming and always had the desire to do it. From childhood itself she started growing spinach and, she had never bought one for consumption from the market. After marriage also when 'B' was living near the agricultural college, she had a bought some chilli and planted, its growth gave her a lot of happiness. The family was of full support with the husband and son helping her in the process. There has been problems like that of rotting of crops during the hot season, and the family tries to plant the seeds just before the rainy season in order to overcome this problem.

Farming has very positively affected the family as, the organic farming especially helps the family to be healthy by keeping them away from the health problems caused by chemical fertilizers. Also 'B' had some knee problems, which were treated in many hospitals, could not get cured. But now she is completely okay as she moves up and down from the terrace in order to manage the crops. The waste management also has become easy, as the food waste have started acting as manure once the farming had started.

More than being a work, farming is like a nutrition to the family, where it provides the family with healthy and nutritious food. 'B' says that, the organic farming has got good market nowadays and it really helps in keeping one healthy and it is understood widely by the people. The Government has also started realising its importance and they are calling 'B' and similar organic farmers as resource persons in many occasions.

'B' gets up at 6 in the morning and goes to the terrace in order to take a quick look at the crops, after during the kitchen work itself, removes the germs from the vegetables. After that the crops are watered in the morning, and she explains that it is better to water them in the morning as it gives them sufficient time to have the photosynthesis process. The farming is like a bundle of happiness for the woman and removes the feeling of emptiness when no one is at home.

There has not been much help from the Government during the time of summer, but Thanal has always been supporting her. Also the fact that, now the incentives for farming come through the Panchayat and the above poverty line ones have lesser amount of incentives allotted to them. When the incentives came through Krishibhavan, it was benefitted, but now

it comes through panchayat and thus not so beneficial. The benefits mostly go to the reserved castes and classes. The soil of the area is also not very good for farming as its more acidic, 'B' uses calcium carbonate in order to reduce its acidity.

Not much documents are kept for the intimation of the harvesting time, but the required bills are always kept safely from Thanal. The main manure used are cow dung, excreta of hen, bone powder, 'Kadala pinnak' and 'Veppin Pinnak'. The vermi compost is not used much now. She is also the member of Kudumbashree, and the members also buy the vegetables. But it is not found to be much beneficial, when given to Thanal. Being a part of Kudumbashree has not also helped her much as there were not provision of any incentives. She explains the problem of growing a hen to be that, it eats whichever crop growing on the ground. 'B' is not familiar with the concept of integrated farming, but practices it by rotating the use of manure in the form of excreta of animals to help the crops grow better.

4.4 Case C

'C' is a 47 year old woman living with her husband , and two children . From childhood itself, she has been into farming and growing vegetables as 'C' and her mother used to farm in front of their house. Later when she got married and had the first child, 'C' often felt bored , when the child went to nursery. During that time she used to grow flowers. As the flowers bloomed really well, she understood that the soil was really good. Then the leftover seeds of the consumed vegetables were planted in and got good yield as well as returns. Eg 4 brinjals would come around 1 Kg. She used to give it to the relatives.

'C's neighbour was an associate of Thanal and informed about the chance of selling the vegetables there. She approached Thanal and the vegetables got selected. In the beginning the neighbour used to bring it to the organization, and later 'C' herself did it, when the yield was high. She also grows jackfruit, banana, yam etc. other than the normal crops.

Her main inspiration was the growth of the vegetables. Once she tasted success, she became hungry of it. 'C' had very good support from family in the form of husband, mother in law as well as the children.

There has been some problems like the crop infection, but till now no personal problem has affected her farming. She says that farming helps in being mentally sound and leads to emotional happiness. She uses natural pest repellent such as a) Urine of cow b) Laison c) Chillie etc. Farming has become a part of her life as, she used to give some of the yield to the

children who came to study tuition and the children also gave some other plants grown in their house. It has not been much expensive as, no other materials is required to be bought. If the case was of a land taken for lease, then it would have caused trouble. More than an employment, farming has been an occasion of togetherness of family, which brings more and more happiness.

Her day starts at 4:30 in the morning and then after the kitchen work she finds some time to take care of the crops. After which she come to Organic Bazar, an extension unit of Thanal, where she is presently working. The work goes up to 7 in the evening. 'C' works as a procurement assistant. She is very optimistic about the market of organic farming as, the awareness among the people is gradually rising. It was not present much before.

The main types of crops are Cucumber, Brinjal, Lady's Finger, Yam, Beans, and Banana etc. The well in the house acts as major water resource and there has not been any approach from her side to seek help from the Government. Thanal has been of constant support, but she has not been much approached by organization like Gandhi Smaraka Nidhi and Krishibhavan.

She explained the difference between pesticides and pest repellent, the former kills the pests where as the later only resists them and in organic farming pest repellent's are used. 'C' says that, pests are also important and we do not have the right to take their lives. The geography and soil of the area is perfect for farming. 'C' does not keep any document for accounting or harvesting, she knows the time by looking at the crop. The money and related bills are taken care by Thanal. She is a part of Kudumbashree, but has not received and agricultural help from the team other than the usual thrift and credit.

The common manures used are a) Cow Dung b) Ash c) Caster cake d) Cows urine etc. She explains about the goat being an added asst to farming as the excreta of goat can be used manure and the leftover food can be given to the goat as a feed. The farming has very well helped her preserving her and her family's physical as well as emotional health.

4.5 Case V

Case 'V' is living with her family which consists of her husband, daughter and son. She does Farming in near her house within the 2 scent in the area. She used to give vegetables to Thanal earlier, but nowadays it's not been given. She came to know about Thanal after marriage, when one of her acquaintance was working in the Zero waste campaign. At that

time organic bazar was working in a small scale. She also had then started working in one of the Projects of Thanal, and used to come to Organic Bazar once in a month in the Second Saturdays. After seeing her interest, she was permanently placed in Organic Bazar. 'V' and her mother used to do farming in her house from earlier times before marriage itself, and now her son is very much interested in farming with the classes from Ms.Usha of Thanal. He is very inspired to not to use plastic materials and specially avoiding it. 'V's son very creatively uses plastic materials to make water bottles to feed plants with water.

She had got immense support from the family members and says that, the farming is very much self-inspiring and 'V' gets peace of mind and happiness while practicing it. She says that "The plants and vegetables are living ones and we should ask for their consent while plucking them. 'V' argues that, the people in the city area have become more concerned about the plants and vegetation than the rural ones. As when you visit a rural area, we cannot see many trees, but coming to the city areas like Vellayambalam and other places, the trees can be seen.

She had the culture of farming in herself, because of the earlier practices. 'V' had also seen many people taking land on rent and doing farming and from them, she also learnt. Likewise she also does other works and mentions that, in the interior areas, we could see the vegetation being grown and that has been a great inspiration for the people like her.

There have also been problems of pests and climatic change when it comes to farming. There have been attack of pests, because of which she had to put the organically prepared pest repellent's and also sometimes when the small leaves of spinach and coriander are taken away by the rain, 'V' becomes helpless as nothing can be done during that time. There have also been the problems of theft. But 'V' says that, she is happy to give away food and people do not need to indulge in theft. 'V' says "We are happy if someone comes and asks us food, we are really happy to give it away". She has studies up to 10th grade and has been into farming before marriage. 'V' says that farming is not only a part of life but life itself. Without farming she would have been not been here and her livelihood would have been lost. More than a job its happiness as it is a very delightful experience, when one sees the things planted by oneself growing. Even if one has some problems, we forget it when indulging in the work. If not farming, she would have been in his house only and her social life would not have been so enriched. Also she says that, she has been getting a good pay considering her educational background and also the social constraints revolving around a women.

She had got first information about Thanal, from her acquaintance and also when she went to Ayalkootam and also during paper and coconut Shell training from the Unit. 'V's family has been of great support from the initial stages itself, like laying the soil bed. In the case of soil bed, one can pluck the vegetables from both the sides. Her children have been involved in the activities of Thanal from the earlier times itself, when they used to participate in their programs like that of waste management .They have been well blended with nature. Especially her children have been involved in farming, but now as they are busy with their studies, it is difficult for them to focus on farming.

'V' says that, nowadays Organic Farming have been gaining the Market nowadays and there was a misconception that only inorganic farming can lead to good productivity , which is being rectified these days. If the farmers are dedicated enough, organic farming can flourish. People are accepting it more because, they have become health conscious. There is difference in the vegetables from organic bazar and Chalai, which would only be understood once we start cutting the vegetables. Organic vegetables, even if little bit rotten, while being cooked gets a new vibe again starts being fresh. It is one of the reason because of which people comes and buys these vegetables again.

'V' grows bitter guard, banana, yam, pumpkin, chilli, which are taken for house and rest given back to Thanal. The water resource used is from the well only which does not contain any sort of problem. The water used for dishwashing is also use. She has not approached Government or Non Government authorities for help, but they have approached her mainly with the seeds. But 'V' has not accepted any help because the seeds there may be grown from inorganic materials. She says about the Agricultural College at Velleyani, which also use inorganic compounds. 'V' says that, the vegetables which look beautiful from the outer portion are not very good from the inside as constant pesticide is sprayed. The soil and topography of the place is perfect for the farming. Ayalkootam has inspired her to promote farming and the members of the SHG, are also doing farming. She says that, organic farming and simply farming has helped her to maintain better health. But she is suffering from some other physical problem. He house does not consist of any cattle or hen. She constantly encourages her children to have interest in farming and also, believes that since the children start losing the present food they will themselves start growing.

4.6 Case Z

The women organic farmer is 47 years old works in the organic bazar wing of Thanal and has been doing organic farming in 30 cents of land. She understood the ill effects of the pesticides and fertilizers, when her son tasted a difference in the normally grown tomatoes and the ones which were bought from the market. Experts were consulted then, and the core problem of harmful pesticides and fertilizers were understood. As a result, she decided to grow vegetables on her own by using the land available. Once she started growing, the vegetables had good yield. During that time, the team from Thanal had visited fields in the area and found good growth in her garden and enquired about the inputs as well as the productivity. 'Z' told them about the availability of cow, goat, hen and other cattle's and their excreta being used as a fertilizer and manure for the crops. After that, the vegetables were checked and taken to Thanal and during the time of vacancy she was called in as a staff. And another factor for motivation, that is the activity becoming income generated, was added to the process. The farmer could earn as well as have good and healthy vegetables.

In the early days of farming, 'Z's mother was the main motivational source, and the other members of the family also supported her. Sometimes the hard labour of removing and transferring soil is done by her husband. She describes it to be of great help as, during this era, there is a problem of ego between the husband and wife. Also 'Z' describes the process to be helpful for her family's diet as most of them conceive mostly vegetables. She describes her food habit to have relations with the ancestry as, they were all people from rural area and used most of the edible natural resources in their food chain. 'Z' expresses her happiness to be present in this field and quotes the words of experts from Gandhi Bhavan , who had first visited her. She says that, the experts told her about taking care of others health through this process of organic farming. Another important fact about her experience is the increasing amount of money, which she is getting. 'Z' has participated in many classes relating to this area.

There have been problems like the crops getting rotten due to pests and the yield being less. She has been using the natural pest repellent's in order to overcome. There repellent's are made out of the locally and homely available materials. She is on a break from farming now as being involved in the work of organic bazar, which does not allow her to dedicate sufficient time for the farming process. But, within all her limits, 'Z' tries her best to spend some time for farming. She prepares the needed manure on her own by using the leftover

vegetables and the food, these materials are dumped in to a pit and removed after a month as they would have got good nutrient value required for the crops. Some vegetables are grown in the area, which are also brought to the organic bazar like jackfruit, items for pickle etc. There has not been any other personal problem, which has hindered the process of farming.

Farming has been a very important part I her life, as she suggests that she could take this knowledge to a lot of people through awareness classes. She had been a nominee in the elections and also held the place of CDS in the Kudumbashree. 'Z' could take the process of organic farming to many households and have made a lot of good relations among the people in the community. She describes farming to be the basement of her family's life, as the process provides the healthiest food ever possible. Now also there is great support from, the family and especially from her mother.

'Z''s day starts at 4 AM in the morning , and does the work in the kitchen and along with that itself , puts the left over vegetables in specific buckets to be used as manure. If she does not get enough time in the morning, all these vegetables are collected in a bucket full of water, and used in the evening after coming back from the job. After finishing the household work, she reaches Thanal and leaves the office in the evening.

She says that, the field of organic farming is receiving both recognition as well as profit in the present era and 'Z' has also been profited from it. The main reason is that people have understood the importance of the usage of organic farming and the increasing ill effects of inorganic farming of the usage of chemical fertilizers. 'Z' says that, there is also evident taste difference between both the vegetables and the one made out of organic process is found to be delicious than the other. She cultivates banana, drumstick, cucumber, spinach, lady's finder, chillies (Various varieties), brinjal etc. The irrigation is completely depending on the domestic well.

There has not been any help from the Government, but not anything directly from them. But other organizations like Gandhi Smaraka Nidhi and Thanal has been of great help. The climate also is not very supportive as the heavy rains wash away the delicate plants and vegetables. There is also the problem of water logging and now only the carry bags are being used. 'Z' has got the certificates as an organic farmer and as an employee of the organization, but has not got any document regarding the cultivation period or the accounts. She is a member of self-help group and it has helped her to get some help from the Panchayat for the farming process.

Major manures used are excreta of hen, cow dung, waste of left over vegetable farming, ash and natural vermi- compost as well.

4.7 Conclusion

The chapter describes in detail the cases of five women organic farmers from whom the data is collected. It takes the researcher through a number of motives, challenges, coping strategies and impact the farming had on the women. On the basis of this data collection the themes and sub themes will be identified in order to provide the discussion and interpretation.

Chapter V

Case Discussion and Interpretation

5.0 Case Discussion and Interpretation

5.1 Introduction

The chapter discusses the cases presented in the previous chapter according to different themes. The themes and sub themes identified after analysing the cases are as follows. 1) Under the theme motives the identified sub themes are a) Family background in farming b) Health Living c) Income d) Environmental Protection e) Support from agencies f) Food security. The second theme identified is the Challenges and Coping strategies and the sub themes identifies are a)Pest Attack & Natural Pest repellent b) Infertile soil and Natural Manure c) Climatic conditions d)Inappropriate marketing facility and Support from external agencies e)Theft f)Work Overload and Effective ways of time management and the third theme is identified to be the 3) Impact of organic farming on the women farmers life and the sub themes are a) Social Impact b) Economic Impact c) Health Impact . The thematic analysis follows.

5.2 Motives

Research Question: What are the motives of women in organic farming?

The theme identified under this particular research question is the motive of the particular farmer for engaging in the farming process and the subthemes identified are a) Family background in farming b) Health Living c) Income d) Environmental Protection e) Support from agencies f) Food security.

1) Family background in farming

Case A- “My family always had an orientation towards farming and we used to grow anthurium and other flowers at my home. After coming to the in-laws also it has really been a motivating factor for me in continuing farming. Here (at the in laws) also I did the anthurium farming and then I went to vegetable cultivation”

Case B – “I came to farming, after inspiration from my ward member, as he found a lot of land around my area being left free. So the main source of motivation was from the member who was working in my area. Then I started farming in the 40 scents of my land.”

Case C- “Before my marriage, I was farming in my own home and with the help of my mother. My family had the culture of farming and I carried it forward. After coming to the in-laws had started farming before my marriage itself, after that coming to my in laws, I tried to test the soil by putting some seed of vegetables in it and found the seeds growing well. Thus I again started farming.”

Case V – “We used to farm at my home, especially items like spinach and other leafy materials. We did not have the knowledge that it could be bought from market. I had also seen many farmers, doing farming in the areas of my own home and I liked it very much from then itself.”

Analysis and Discussion

Analysing the above cases it is found, there was very important role played by the family of these farmers in their farming and it proved to be a reason and motivational factor in some farmers life to start farming own their own. The concept of family farming in which, the family comes together and does the farming and the values are being transferred from one generation to another. Being from a family of farming background has helped the women to start farming and by being a motivation to it .It is supported by the study by Swendener (2012) which supports the idea that farming background and identity influence farm women’s employment motivations. Cummins (2009) also supports that women from farming background may find it easier to adapt to farm life where years of family history and experience socialized them into a farming role

Healthy Living

Case A: “The vegetables bought from the market are not at all good for health as they are grown from the inorganic chemicals, that is also one of the reasons I grow the vegetables here itself from the organic process. I make sure that, my family is very healthy and we are not facing much problems regarding health”

Case Z: “Health is one of the major reason because of which I have opted for organic farming. Once I found a taste difference in the tomato juice given to my son, and I understood that, it might be because of the chemicals used in it. I did not wanted to risk the life of my family and then I started the farming. My family members are very healthy now, and they are not affected by any diseases and all.”

Analysis and Discussion

Analysing the cases it is understood that healthy living with the intake of organic food has been an important factor motivating the women organic farmers to follow the farming and it has helped them in keeping their families healthy. It might be because, she had always used organic vegetables in her diet from childhood itself, which makes her to feel no change in the health aspect. Paul and Rana (2012) has similar results which suggest that consumers prefer organically produced food products rather than products produced using synthetic chemicals. The benefits of consuming organic food products are health, nutritional value, animal welfare and environmental protection. Rundgren(2006) indicates that principle of health enhancing and sustaining ecosystem and human health by discontinuing chemical substances is a major principle in organic farming.

c) Increased Income

Case A: “I am a housewife and usually I sit at home after my kitchen work, I did not have much contribution to our family income, but after I had started farming I could save the money used to buy the vegetables from market, which helped me to save money and continue the farming. I did not have the idea of selling the vegetables to any market or other stores, but I knew that it would reduce my spending on vegetables for domestic use and help me to save the money and thus increasing my savings”

Case B: “I had in mind the economic benefit from selling the vegetables to different stores as well as using it for my domestic use, which would save me some money. For that I tried to enquire at different places and was disappointed as there was not much positive response, but after some time fieldworkers from Thanal visited our locality and found my vegetables interesting”

Case D: “I did not think of any economic impact while going for farming. it has always been my passion and I like it very much , and from childhood itself I have been associated with it. But there was also a motive that I could save some money which had to be put into buying vegetables else. “

Analysis and Discussion

Analysing the cases it is understood that only one of them had the idea of doing organic farming for the economic benefits from selling the vegetables to the market or consumers.

Other tried to do it in order to save the money they used to buy vegetables for domestic use and thus increasing their savings. Altenbuchner, Vogel & Larcher (2017) in their study suggests that there are improvements in health, food security and economic improvements for women through organic farming. Sitthisuntikul, Yossuck and Limmirankul (2018) in their study found that their organic products were distributed through small market places (1) at home direct sell to customers inside and outside villages who came to buy organic products at a house of small land holders, (2) local market—a particular market place inside community for selling general goods. It also found that farming provided the variety of products that were sufficient to feed their family members in household.

d) Environmental Protection

Case D: “My son and I am very much interested in conservation and preservation of the environment. I was an active participant and an employee in Thanals zero waste campaign. After that my son was very supportive and excited to take up this organic farming. We have been able to develop organic pest repellent’s than the pesticides and we believe that , no organisms should be killed so we do not use pest repellent’s but pesticides.”

Case A: “I like being in harmony with nature and living close to the green environment. I feel like I am talking to my children and taking care of it. It is very much rejuvenating to live in connection with nature and more than we are able to provide toxic free food to a lot of people.”

Case C: “In organic farming we do not use pesticides, rather pest repellent which do not kill the insects, but only resists it. In organic farming we do not harm or kill any organisms but only try to resist them”.

Analysis and Discussion

As seen above the organic farmers suggest that they like to live in harmony with nature and their feeling and emotion for each living organism, may it be a pest by being the part of organic farming. They treat the environment to be their home and the plants to be their children; it highlights their environment and social responsibility. In the case of pest controlling also, the organic farmers use pest repellent which only resists the pest and do not kill, thus keeping in mind the balance in biodiversity. Some studies are found in which is also supported in the literature -Flatein et al (2005) suggest that the farmers have been

moving from inorganic farming to organic farming in concern to the protection of the environment. Kubala *et al* (2008) suggest that farmers come to organic farming because of environmental aspects that is, concern for the environment; concern for the soil, about chemicals in food, detrimental effects of synthetic chemicals, food quality and the health of farmers, their families and livestock. Home (2007) in the report Pest Management for Organic Agriculture states that Organic crops may also be treated with pesticides within the guidelines of the various associations, but in general these are less potent and shorter residual. Where broad-spectrum insecticides are used (organic or conventional) then effects on non-target organisms means that diversity is lowered.

e) Supporting Institutions

This segment visits the various support they get in the form of seedlings, pest solutions, fertilizers as well as technical advice.

Case A: “I have been receiving support from different organizations, which have been working for the farmers and their welfare. I had grown the vegetables in my area and I had come to know about Thanal and the way they are buying organic vegetables for the organic bazar. Then I have started selling it to them. There are also other organizations, which have rendered support to me like the Gandhi Smarakam and the Krishi Bahavn. There has not been much support from the local government. Through these organizations, we were able to get certifications and also could learn many new aspects in organic farming.”

Case D: “One of my acquaintances working in the zero waste campaign of Thanal told me about it and then after enquiry, the organization has been taking in the vegetables grown by me. Later when there was a vacancy, in the organic bazar, they called me up and I joined here. I am very fortunate to work here, as I like this job very much and also with my limited educational qualification, this is a very good job I could get.”

Case Z: “I came to know about Thanal, when the people came to visit fields in my locality and found many vegetables in my compound. After enquiry I agreed to be a part of it and sell vegetables to it. Later, when there was a vacancy in organic bazar, I was called up. Gandhi Smarakam has also helped with their expertise in the field.

Even though there has not been any direct help from the Government, I was able to get some help from the Panchayat through the self-help groups.”

Analysis and Discussion

Analysing the following cases it is found that there have been different organizations in the field and they have been helping the farmers in various ways like providing expert advice, capacity building. The main help has been coming from the Non-Government organizations and not that from the Governmental. The notable organizations are Thanal and Gandhi Smarakam. One of the farmer says that she has got help from the panchayat, through the self-help groups. Evidence has been found in the studies Salifu *et al* (2012) states that Farmer Based Organizations in Ghana indicated that the main instrument for influence of the NGOs and development agencies is their capacity building efforts via farmer-based organizations (FBOs), which help to improve the technical efficiency of farmers in a number of ways. According to Fischer and Qaim (2012) NGOs and FBOs enable farmers to achieve higher outputs with the same quantity of inputs as well as the timely use of such inputs, thereby yielding higher technical efficiency. In a documentary by Asianet News (2015) describes about Thanal and the farmers supported by them. It talks about organic bazar, which collects all the organic vegetables and sell them to the consumers, ensuring proper marketability to the producers, avoiding the middle men.

f) Food Security

Case A: “Before coming into the field of farming, we had to buy vegetables from the market, which we even did not know of being healthy but after I had started farming, I have been able to fulfil all the needs in terms of food for my family. The money with which we needed to buy the vegetables is also saved and the family is completely healthy.”

Case C: “Farming has been helping me to make sure that proper nutrient reaches my family through food. We are not facing any shortage of food and we have been giving the left over to Thanal, which again adds up to our income. Earlier it was not the case as we had to buy from the market and the prices of vegetables changed according to the demand and supply, which was difficult for us”

Analysis and Discussion

Analysing the cases it is understood that the aspect of food security exists with the families indulged in organic farming and they have been able to have good and healthy food. They were also able to adjust at times of price rise in the vegetable market. Studies in the literature review show that Sitthisuntikul, Yossuck and Limmirankul (2018) in their study that the farming practices provided the farmers family with variety of products that were sufficient to feed their family members in household. Their family members were able to have rice through year and were able to access fruit seasonally such as banana, grapefruit, and papaya. Rundgren (2006) in the study. Fakged, Morachart & Aunpim (2016) in their study writes that the agriculturalists are able to access various safety foods seasonally in their cultivation area and share safety foods with an organic group in a local community since they stop using chemical substances, emphasize integrated cropping, and depend on farm materials workers in families for cultivation.

5.3. What are the challenges faced by the women farmers while engaging with organic farming?

The second theme identified in the study are the challenges they encounter in the present scenario on account of engaging with organic farming.

Case A: “There has been problems from pests, they attack the crops and the three is no [articular in organic pesticide used, but organically prepared pest repellent’s are used to clear the pests. Sometimes the climatic variations also affect the crops and its yield, and for that we take prior care of the climate and its conditions before planting the crops. I have also faced the problem of acidity in the soil, which we treat by putting lime. Nowadays I do not get enough time as I have to manage both driving school and farming, I try to manage it by getting up early and taking the help of mother in some jobs. ”

Case B: “I found that there were problems with marketing, as I had grown enough vegetables, but I could not find a proper channel or place to sell it. Later I found out Thanal and started selling the items there. There was also problem with the acidity of the soil, which was treated with the lime. And as usual, there is also the problem of pests as well, which is treated with organic pest repellent. I am not engaged in any other job, than farming and I find enough time to do it and I get the yield accordingly”

Case C: “There are no other problems affecting the crops than the presence of pests, the remedy used in the organic pest repellent. We use organic pest repellent’s to overcome the problem of the pests. Usual pest repellent’s are pest repellent such as a) Urine of cow b) Laison c) Chilli etc. Nowadays the problem is that, I do not get enough time as I used to get to do farming, as I am also working at the organic bazar, thus the yield has been less, but there are enough vegetables available to feed our family needs. I try to do farming before coming to the office and sometimes after going back.”

Case D: “The main problem I face is of pests, sometimes the yield is very less because of the pests. Climate also plays an important part in the less crop yield as it sometimes rains heavily and sometimes it’s a situation of draught. There has also been another problem of theft, which affected the farming, we are ready to give them if they ask, but it feels bad if someone robs our vegetables.

Case Z: “The main problem is the yield being less due to the crops getting rotten due to the attack of pests. The pests are managed by natural pest resitants. I prepare them myself and also, the natural fertilisers are also prepared by putting the leftover vegetables into a dig under the ground and opening it after some days. Nowadys as I am also employed in organic bazar, I do not get enough time to do farming. So what I try to do is doing many tasks together, like putting the leftover vegetables in the basket for manure and washing plates together, which saves me time. Sometimes I also take the help of my mother.”

Analysis and Discussion

Pest Attack & Natural Pest repellents

From the case studies, it has been understood that, there has been the following problems associated with the drops, like attack of pests have been understood as a major problem and was agreed by all the farmers. Fohnovic (2016) in her article writes that Farmers are faced with myriad of production challenges where the most common problems are pests, which include insects, diseases, and weeds. Home (2007) in the report Pest Management for Organic Agriculture states that Organic crops may also be treated with pesticides within the guidelines of the various associations, but in general these are less potent and shorter residual. Where broad-spectrum insecticides are used (organic or conventional) then effects on non-target organisms means that diversity is lowered. It also shows the presence of organic pesticides, but nowhere has it used the term pest repellent.

Infertile soil has been found as another problem, the infertility does not allow the crops to have full yield, and the measures sought are crop rotation and the use of bio fertilizers by the farmers. Pimentel and Greiner (1977) in their study states that usage of chemicals on the agricultural land is reducing the soil fertility and in succeeding crop season’s farmers are forced to use more of chemicals to get the same yield as received before. Raimi, Adeleke and Roopnarain (2017) in their study stated that low fertility and inefficient management of sub-Saharan African soils have been the major challenges facing productivity among smallholder farmers and bio fertilizer is a viable solution. International Atomic Energy Agency (n.d) states that soil fertility can be further improved by incorporating cover crops that add organic matter to the soil, which leads to improved soil structure and promotes a healthy, fertile soil; by using green manure or growing legumes to fix nitrogen from the air through the process of biological nitrogen fixation. Crop rotation is a process mentioned in the literature, which is

also being practiced by the organic farmers. Ecochem (n.d) in their article suggests that animal faeces while properly treated/processed manure is a value added marketable organic residual. Manure is an excellent fertilizer containing nitrogen, phosphorus, potassium and other nutrients. It also adds organic matter to the soil which may improve soil structure, aeration, soil moisture-holding capacity, and water infiltration. This method is also practiced by the women organic farmers to increase the fertility of the soil.

Climatic conditions

Another problem is the climatic condition because of which, the crops are not able to get proper temperature to grow and as a result of which they are rotting and the yield is being less. Ramsundar (2017) in his article writes that monsoon plays two extreme parts, at times of rains, it's like flooding and when it does not rain, there comes the problem of draught and global warming causes climate change in rapid and different ways which lead to the problem loss of yield and pest attack. Dev (2012) in a study also suggest that Climate change is a major challenge for agriculture, food security and rural livelihoods for millions of people including the poor in India. Adverse impact will be more on small holding farmers. It also suggests that collective actions by different organization are very important to combat global warming. International Federation of Organic Agricultural movements suggest that many farmers look at organic farming as the best way to increase the ability of the farming system to continue functioning when faced with the adverse effects of climate change. Considering the data available, the farmers are not able to cope with climate change properly as it not in their control.

Inappropriate marketing facility and Support from external agencies

Inappropriate marketing facility was yet another problem the farmers had to deal with. They could not find a possible buyer for their produce, which landed them in dilemma and confusion. Kristiansen, Taji and Reganold (2006) in their study say that inadequacies in regulatory and marketing structures (e.g. labelling) is a problem faced by organic farming. Singh (2006) in his study state that small farmers require professional training in marketing as well as in the technical aspects of production. IFOAM n.d in their report stated the following challenges in marketing for the organic products 1) Limited expertise in marketing. 2) Supermarket challenging - pricing, variety, global trends. 3) Organic suppliers being smaller than conventional ones, wholesalers tend to discontinue slow moving items - continuous disruptive supply. 4) No labelling laws exist in the country. These problems of the

organic farmers is addressed by Thanal through its organic bazar which bring organic farmers, producers and consumers together for efficient exchange of organic food. It was made possible through consistent and persistent extension work, capacity building and sensitization done among marginal farmers in different pockets of Kerala for enlarging the supply base. Consumer sensitization and awareness programmes also played an important role in getting more consumers to support Organic Bazaar. Salifu *et al* (2012) in the study stated NGOs and development agencies help the farmers by providing group management training, helping to reduce transaction costs while purchasing inputs and increasing bargaining power in the market. This resonates with the work done by Thanal and other organizations like Gandhi Smarakam in the field of organic farming.

Theft

Theft is another problem faced by these farmers, they say that the people from nearby houses robs the farm and creates problems and resentment among farmers. The literature also quotes such incidences, The Columnist (2017) a newspaper writes that crop theft has long been an issue for farmers, and evidence suggests the problem may be growing like a weed in places where urban development is encroaching on agricultural land. Most of the problems are along the rural-urban interface, where roads and trails run beside or through farmers' fields. Passersby may only steal a bucket of blueberries or a perfect pumpkin. Just like the people moving nearby the farm does in the farmers case in the study. The Telegraph(2016) suggest some solutions to crop theft which include 1) do not plant tall trees or shrubs around a garden gate; this provides cover for thieves.2) Use's Nature's defences: thorny hedges of holly, hawthorn, and blackthorn.3).Install a gravel drive; you can hear footsteps a long way off. Of this planting the most robbed vegetables away from the wall and usage of thorny bushes can be useful in Indian context.

Work Overload and Effective ways of time management

Unavailability of time after job is also a problem faced by the farmers who are also engaged in some other work. They are not able to find time as they could do earlier. Here one of the farmer is involved in her own driving school and others are working in Organic Bazar. Literature also presents a study which explains the different roles taken up by a women. Winder(2018) writes that Additional to their role as producers, rural women in Latin America and Caribbean , and similarly to what happen in other regions of the world, have other important roles as they serve as, administrators of the home, healers, counsellors, community

leaders, mothers and wives. It is found as an obstacle that limit their development and prevent the full expression of their productive capacity.

The women in the study combats the problem of having less time by getting up early in the morning , someone at 4 am and sometimes at 2 am. They also takes the help of their family member like mother, husband or children at times. They also use the method of multitasking by doing different jobs at a time and thus saves time. Reddy (n.d) also suggests some similar steps in her article to on time management for working women , which includes 1) To rise early , which helps in planning the way the day should go 2) Involve in multi-tasking-that is to do different tasks together in order to save time 3) Pre-planning:Pre arranging the next day before going to bed or resting helps in having a clear idea and plan.4)Ask for help: Asking for help at the time of need is also required like from the family members.

5.4 What are the social, economic and health impact of organic farming on the lives of women farmers?

The last themes identified in the study is that of impact of farming on the farmers, three sub themes were also identified which includes 1) Social Impact 2) Economic Impact and 3) Health Impact

1) Social Impact

The various stories show of an increase in social acceptance, respect, connectivity and better social capital. In a particular instance we find them emerging with better social skills and assuming positions in the society.

Case A: “My social status and acceptance among the people have increased as it is a privilege to do organic farming as it an activity with social conscience. I was also blessed to receive many awards relating to the blessed to receive many awards from the Government and Non-Government institutions. I was also lucky to get the certification of Organic farmer from the agricultural ministry.”

Case B: “I have received applause from the Panchayat and Non-Government institutions for organic farming. Now a days I go to different group meetings as a resource persons in order to teach the farmers about organics farming and it prospects. I have been able to deliver different classes and meet new people and build new relations thus being a part of wider network of organic farming and getting recognition”

Case C:” I also used to teach students tuition and they always loved to have vegetables from my home, they would bring different seeds from their place and I could give the vegetables to them and back as well. It has helped me to build relation with the people around me and I have gained much recognition as an organic farmer”

Case Z: “Farming has been a very important part in my life I had been a nominee in the elections and also held the place of CDS in the Kudumbashree and could take the process of organic farming to many households and have made a lot of good relations among the people in the community. I could also participate in the elections and all because of my social recognition as an organic farmer”

Analysis and Discussion

Analysing the above cases it is understood that the women organic farmers were able to get recognition from different Government and Non-Government agencies which helped them to have a better social status in the society. Also the process of organic farming helped them to widen their networking and helping them to be a part of a socially responsible organic farming network. Studies of Rigby *et al* (2001) that the farmers wanted to be known as someone who has immense care for land and soil. Farmers are influenced by social concerns and moral concerns than the monetary benefits. According to M S Swami Nathan Research Foundation (2017) it has awarded the Karshakashree Award that recognizes an outstanding Kerala farmer has been awarded to a woman farmer from Palakkad. The awardee had been recognized for her work in organic farming, efficient use of land and natural resources. This award is an important method to promote and applaud achievers in agriculture.

Economic Impact

The various cases revisited show definite economic benefits in terms of additional earnings to the family income, self-worth and self confidence. Their stories cited below bear witness for this observation:

c) Increased Income

Case A : “ I have been able to generate income as I could sell the leftover vegetable after my families use to the Organic Bazar, the organic farming helps me to have a sustainable income , which adds to my other income of driving school and it has indeed been a boon.”

Case B: “Even after being old, I am able to work and earn. I can use the money for my own purposes and it adds up to my family income with the income earned from my husband. I feel a self-dignity in doing this. There is no need of any other input as we have the cattle and goat here, whose excreta serves as the manure”

Case D: “I do not have much education, but I could earn by the simple work of farming. After that I got job in the Organic Bazar and I feel that it is one a very good job for a person like be, who do not have a very high educational qualification. I have been able a good income and support my family as well “

Analysis and Discussion

Analysing the cases it is understood that the people were able to earn higher by adopting the organic farming method and it also helped as there were not need of any inorganic input. The leftover vegetables and the excreta of the animals are used as manure for the vegetables. Arimond *et al* (2010) suggests that agriculture helps the farmer by providing a source of food and nutrients, a broad-based source of income, and by directly influencing food prices. Kubala and *et al* (2008) states that perception of organic farming as a profitable as there is low input system and there is possibility of obtaining organic premiums. UNESCAP (2002) in their report potential and best practices in Asia stated that there is substantial evidence linking organic agriculture with improvements in the profitability and income of poor farmers in developing countries. NDTV in their article also presented case of a women farmer who had increase her production, productivity of land as well as the income from farming by shifting to the organic cultivation. Nerju(2010) in a study on benefits to organic farming found that of surplus in organic farming meant improved income to 80% of the farmer respondents in the study. The study therefore considered organic farming to be a feasible production system towards sustainable development.

Health Impact

The following are the stories regarding the health benefits accruing to the women who engage in organic farming:

Case A: “I feel that farming has kept me very healthy, I am in my late 40s and by now some or other disease would have affected me if I had not been engaging in farming. The usage of toxic chemical free vegetables has helped my family to be healthy. At times of stress or sorrow also, I go near the vegetables and start feeling happy. I believe that the plants are my children and it really makes me feel better near them. Farming is a self-inspiring process and I feel rejuvenated to do it.”

Case B: “The farming process has very positively affected my health, I had a knee problem, which could not be cured by allopathy or Ayurveda. But after getting involved in farming it have been doing a lot of physical work and moving around and it has reduced the problem of my knee. More importantly the intake of chemical fertilizers has reduced as we do not buy vegetables from market any more. The organic farming has kept me and my family disease free and healthy.”

Case C: “organic farming has played a great role in keeping away the diseases in our family. Now we do not but any food prepared out of inorganic method and thus we are all healthy and we eat nutritious food. “

Case Z: “I had started farming because of the health impact only, I understood the taste difference in the vegetables cultivated out of inorganic and organic farming and shifted to organic farming. My family and I are very healthy and all the credit goes to the use of organic farming.”

Case D: “There has not been much change in my physical health, after being an organic farmer, but of course organic farming helps to keep away from many diseases as after including organic food in our diet, there has not been any serious health issue affecting our family. I get peace of mind and happiness, when I go near the plans and even if I have some problems I forget those.”

Analysis and Discussion

Analysing these cases it is found that all the organic farmers state that organic farming has very positively affected their as well as their family’s health; they say that it is especially because, no inorganic pesticide or fertilizers are used in the preparation of food. Studies in the literature also shows similar results. In the study by Paul and Rana (2012) there are mention of very clear benefits of consuming organic food products are health, nutritional value, animal welfare and environmental protection. Pimentel and Greiner(1997) states that in inorganic farming farmers use the chemical inputs since they are getting the high yields. But the negative impacts are equally important to be considered. Continuous use of chemical inputs such as pesticides and fertilizers have caused damage to the environment, human ill health, negatively impacted agricultural health and caused problems to the environment. Watness (2014) states that food produced without chemicals is better for the environment and our health. Kristiansen, Taji and Reganold (2006) state that reduced chemical residues in food and the environment is one of the benefits of organic farming.

One of the farmer said that she had problems with her knees, which was cured after engaging in farming .It might be due to the flexibility her body has achieved after getting into the process of farming as farming is a physical activity. Literature finds similar studies, like Kent(2017) states that even moderate forms of garden exercise can increase muscle strength and endurance in activity-reduced individuals. National Agricultural Development Company

(NADEC, n.d), in their article states some benefits of physical activity, which includes increased endurance, muscle strength and flexibility thus decreased back pain ,greater bone density and lessened risk of adult bone loss later in life known as osteoporosis ,reduced body fat, increased lean tissue consequently stronger self-image. Bellows (n.d) in the report states some benefits of gardening which are even moderate forms of garden exercise increase muscle strength and endurance in activity-reduced persons including pregnant women, cancer survivors, and those generally sedentary.

Two farmers also say that they get peace of mind and satisfaction, when they indulge in farming and it helps them to stay happy. Seeing the plants grow is a joyful feeling for the farmers. Literature also presents certain studies, which matches the findings, like Bellows (n.d) in a report states that Mental Health professionals use plants and gardening materials to help patients of diverse ages with mental illness improve social skills, self-esteem, and use of leisure time. The field of horticulture therapy promotes plant-human relationships to induce relaxation, and reduce stress, fear and anger, blood pressure, and muscle tension. Significant research shows that natural scenes evoke positive emotions, facilitate cognitive functioning, and promote recovery from mental fatigue for people who are in good mental health. Kent9 20170 in the article states that relaxation and stress reduction are significant benefits associated with spending time in green areas. It benefits the mental health, mental outlook, and personal wellness of individuals. Thus urban agriculture can be a key element in successful health intervention programs because it addresses simultaneously the physical, mental, spiritual, and social health of individuals and their communities

5.5 Conclusion

The chapter has discussed the case presentation on the basis of different themes by connecting them with the available literature review. The chapter paved way for understanding the themes in a deeper way and in different dimensions, the available findings were substantiated by the literature, which made it more authentic and it lead way to new findings and suggestions

Chapter 6

Findings and Suggestions

6. Findings and Suggestions

6.1 Introduction

The study titled “Women Farmers and Organic Farming: Case Study” is a qualitative study undertaken in the Women Organic Farmers Initiative hosted by the Thanal, an NGO working in the field of environment in Thiruvananthapuram. The study examines the impact of individual organic farming initiatives on the lives of women farmers. It also tries to find out the motives of engagement of women in organic farming and the challenges faced by the women farmers and coping strategies adopted while engaging with organic farming. It also examines the social, economic and health impact of organic farming on the lives of women farmers. The study adopts the Case Study design and examines five women organic farmers Thiruvananthapuram District using an interview guide. This chapter gives a detailed understanding of the discussions and findings of the study, based on the research question. The suggestions for the improving the conditions of women organic farmers are also included.

6.2 Findings

The findings are reported under each theme identified under each research question. They are as follows:

- **Motives of women farmers for engaging in organic farming under Women Organic Farmer’s Initiative**

The following factors were found to be driving women farmers for engaging in organic farming.

1. **Family background in farming:** The women organic farmers who had family background in farming had affinity towards farming and always had a passion towards it.
1. **Health Living :**The women farmers had understood the problem of inorganic toxic chemicals being present in the vegetables cultivated inorganically and for better health of their family , the women farmers had shifted to organic farming.
2. **Increased Income:** Increased income was another motive from the side of farmers which lead to organic farming. The surplus produce was sold in the market resulting in increased income to the farmers.

3. **Environmental and Social Responsibility:** The responsibility towards environment and society was also another factor which lead the farmers to start organic farming as the toxic chemicals present in the vegetables were understood as a problem to the environment as well as the people.
4. **Support from agencies:** Majorly support from the Non-Government institution had helped the people to set up the organic farming process in a sustainable way. Necessary inputs were given by the Non-Government Organizations like Thanal and Gandhi Smarakam from time to time. There were Government support also, but when compared to the private sector support it was less.
5. **Food security:** Producing vegetables for their own conception was also a motive for the farmers to get into organic farming. The farmers could produce whatever they needed and the materials were also free of any chemicals or any toxic substances.

- Challenges faced and coping strategies adopted by the women farmers for engaging in organic farming under women organic farmers' initiative

The following were understood as the challenges faced and the coping strategies adopted by the women engaging in organic farming.

1. **Pest attack :** Pest attack was found to be one of the most common problem faced by the women organic farmers and they tried to cope it by the usage of organic pest repellent's like a) Urine of cow b) Laison c) Chilli etc.
2. **Climate Change:** Climate change is yet another problem which affects the yield of the farmers, as sometime it rains heavily and other times the moisture is too low and the crop dries up. The women organic farmers are not aware of any coping strategies for climate as it is a macro phenomenon. But they try to water plants in the morning and sometimes plant them after a particular season in order to save their yield from climatic adversity.
3. **Infertile Soil:** Infertile soil is another problem faced by the women, which they deal by natural methods like putting manure and also vermin compost is used. There are also other methods used like the crop rotation and mulching, which resulting in making the soil nutrient rich.
4. **Inappropriate marketing facility:** One of the farmers had faced difficulty in selling their organic products in the market as the markets local markets do not take in the vegetables from homes and depend on the ones from other states. The problem was solved by the initiative of Organic Bazar, an initiative of Thanal.

5. **Theft:** Crop theft is also a problem faced by the farmers; the crops grown in their farm are taken away by the people near to their houses. There has not been any coping strategy found out by the farmer to deal with it.
 6. **Unavailability of time:** The women organic farmers are also employed in other works also, and as a result are not able to engage in farming fully. But they still try to cope this by rising early in the morning, doing multitasking and as well as asking for help from others at times of need.
- The impact-social, economic and health-of organic farming on women farmers engaging in organic farming under women organic farmers' initiative.

The following were understood as the social, economic and health impact of organic farming on the lives of women engaging in organic farming

1. **Social Impact:** The women have been able to gain more recognition among their counterparts as the organic farming profession is considered to be a socially responsible one. The women have been able to widen their social sphere and gain reputation from various agencies as a social servant. The farmers are having more social relations, than they used to have in the beginning and these relations are helping the farmers to widen their network of work and making them more socially acceptable. Overall they are feeling more confident than they ever were.
2. **Economic Impact:** The women have been able to earn an income by themselves, the simple process of farming and which have made them economically self-reliant and thus having a very sound and positive economic impact on them. The women organic farmers are also able to save the money used for buying vegetables, which acts as an added advantage. The inputs required for the crops are also managed from their houses itself and as a result, there is not any need to buy extra inputs for the crops from the market, thus saving that money also.
3. **Health Impact:** The impacts on the women organic farmers as well as their families' health have been very positive. They are able to live a disease free healthy life after adapting to the organic farming The physical activities in the process of farming is giving them enough physical exercises need to keep oneself healthy and they are able to get peace of mind and happiness while engaging in farming , relieving them from stress and related problems of mental health.

6.3 Suggestions

The following suggestions have been made on the basis of the study:

1. Additional support should be provided to the women organic farmers from the public sector, by way of framing policies and schemes, which are exclusively beneficial for the women organic farmers.
2. Capacity building programs should be provided to the organic farmers to deal optimally with the pests with the knowledge of effective pest repellents
3. Campaigns and collective efforts should be taken to mitigate the problem of climate change and possible solutions should be delivered to the farmers during adverse climatic conditions.
4. Crop insurance should be given for the farmers facing the problems like crop loss or theft.
5. The process of organic farming and its importance should be taken to more women through the formation of self-help groups and encouraging organic farming.
6. The number of marketing facilities like organic bazars should be increased and it should also be made available in the rural areas.
7. State should take strong steps towards curbing the use of vegetables cultivated out of inorganic farming and incentives should be provided to support the organic way of farming.
8. Civil Society organizations should help the women with problems of time management with effective ways of management.
9. Curriculum regarding the positive effects of organic farming should be included from the school level itself, which will help the children to follow the path.

6.4 Conclusion

The chapter has been able to categorize the findings under different research question providing more clarity to the research. The presented suggestions mainly focus on solving the challenges of the women organic farmers and enhancing their coping strategies and also on public and private level interventions.

Chapter VII

Conclusion

7. Conclusion

The present study tries to understand the impact of individual organic farming initiatives on the lives of women farmers. Specifically it tries to explore the motives of engagement of women in organic and the challenges faced by the women farmers while engaging with organic farming. It also tries to understand the social, economic and health impact of organic farming on the lives of women farmers. It has been found that in most of the cases, the farmers had a family background in farming, which has kept the taste of farming in themselves. They are also aware of the toxic chemicals used in the conventional way of inorganic farming, which also act as an important motive, when compared to other motives. The main challenge they have to face is from the pests and the climatic conditions, and especially the latter is not in their control as it is a macro phenomenon. The process of farming has positively affected the farmers in all spheres of their lives and they are very proud to be organic farmers.

The study reveals that, there has not been much effort from the Public sector to curb the menace caused by pesticide and fertilizers at local level as well as the state level. There are genuine non-government organizations working in this field, but more efforts need to come from the public sector and also on a public private partnership basis. Kerala being increasing becoming a consumer state it is important that, the people and especially women shift to the tradition of farming and self-sufficiency, which empowers a family and thus positively affecting a society as a whole. Inorganic farming or usage of harmful chemicals in agriculture should be completely banned and a farming culture should start again in which women are the cornerstones.

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Appendix

Tool

ജൈവ കർഷകർക്കായുള്ള ചോദ്യാവലി

1. പേര് : _____
2. വയസ്സ് : _____
3. വിലാസം : _____

4. കൃഷി സ്ഥലത്തിന്റെ വിസ്തീർണ്ണം : _____
5. കൃഷിയിലേയ്ക്കുള്ള തുടക്കത്തെയും, തെരഞ്ഞെടുക്കാനുള്ള കാരണങ്ങളെപ്പറ്റിയും വിവരിക്കാമോ ?
6. കാർഷിക മേഖലയിൽ തുടരുവാനുള്ള ധൈര്യം ആർജ്ജിച്ചതും പിന്തുണ ലഭിച്ചതും എങ്ങനെയാണിരുന്നത് ?
7. ഇതുവരെയുള്ള കാലയളവിൽ ഏതെങ്കിലും തരത്തിലുള്ള പ്രതിസന്ധികൾ ഉണ്ടായിട്ടുണ്ടോ ? എങ്ങനെയാണ് അവയെ തരണം ചെയ്തത് ?
8. തിരിഞ്ഞു നോക്കുമ്പോൾ , കാർഷികവൃത്തി ജീവിതത്തെ എങ്ങനെയാക്കെ സ്വാധീനിച്ചുവെന്നാണ് തോന്നുന്നത് ?
9. 'തണലിനെയും' സ്ത്രീകൾക്കായുള്ള ജൈവകൃഷി സംരംഭത്തെ കുറിച്ചും എങ്ങനെയാണ് അറിഞ്ഞത് ?
10. കൃഷി, ഒരു തൊഴിലിനുപരി താങ്കൾക്ക് എന്താണ് ?
11. ഈ മേഖലയിൽ തുടരുന്നതിനു കൂടുമ്പത്തിന്റെ പിന്തുണ എത്രത്തോളമാണ് ?
12. ഒരു ദിനം എങ്ങനെ കടന്നു പോകുന്നതെന്നു വിവരിക്കാമോ ?
13. ജൈവകൃഷിയ്ക്ക് അർഹിക്കുന്ന അംഗീകാരവും ലാഭവും ഇന്നത്തെ വിപണിയിൽ ലഭിക്കുന്നുണ്ടോ ?

14. ഉണ്ടെങ്കിൽ / ഇല്ലെങ്കിൽ എന്തുകൊണ്ട് ?
15. ഏതൊക്കെ തരം വിളകളാണ് താങ്കൾ കൃഷി ചെയ്യുന്നത് ?
16. കൃഷിയ്ക്ക് പ്രധാനമായി ഉപയോഗിക്കുന്ന സ്രോതസ്സുകൾ ഏതൊക്കെയാണ് ?
17. സർക്കാരിന്റെ ഭാഗത്തു നിന്ന് ഏതെങ്കിലും വിധത്തിലുള്ള പിന്തുണ ലഭിക്കുന്നുണ്ടോ ?
18. കൃഷിയിൽ നഷ്ടങ്ങൾ സംഭവിക്കാറുണ്ടോ ? എന്തൊക്കെയാണ് വിവരിക്കാമോ ?
19. എന്ത് തരാം ജലസേചനമാണ് സ്വീകരിച്ചിട്ടുള്ളത് ?
20. താങ്കളുടെ കൃഷിയിടത്തിന്റെ ഭൂമിശാസ്ത്രപരമായ ലക്ഷണങ്ങളും , കാലാവസ്ഥയും കൃഷിയ്ക്ക് എത്രത്തോളം അനുകൂലമാണ് ?
21. കൃഷിവിവരങ്ങൾക്കായി രേഖകൾ സൂക്ഷിക്കാറുണ്ടോ ?
22. വിളവെടുപ്പിന്റെ കാലയളവിനെ കുറിച്ച് ഒന്ന് വിശദീകരിക്കാമോ ?
23. അയൽക്കൂട്ടത്തിൽ അംഗമാണോ ? ആണെങ്കിൽ , അത്തരമൊരു കൂട്ടായ്മയ്ക്ക് താങ്കളുടെ കാർഷിക വൃത്തിയിൽ എത്രത്തോളം സ്വാധീനം ചെലുത്താൻ കഴിഞ്ഞിട്ടുണ്ടെന്ന് പറയാമോ ?
24. പ്രധാനമായി ഉപയോഗിക്കുന്ന വളങ്ങൾ ഏതൊക്കെയാണ് ?
25. ഒരു നഗര / ഗ്രാമ പ്രദേശത്തിലെ സ്ത്രീയ്ക്ക് എങ്ങനെയാണ് ജൈവ കൃഷിയിലൂടെ വളരാൻ സാധിക്കുന്നതെന്ന് വിശദീകരിക്കാമോ ?