LEASE LAND FARMING FOR SUSTAINABLE LIVELIHOOD BY WOMEN COLLECTIVES IN THRISSUR DISTRICT

By
SWAPNA THOMAS
(2020-11-077)

THESIS

Submitted in partial fulfillment of the requirement for the degree of

Master of Science in Agriculture

Faculty of Agriculture

Kerala Agricultural University, Thrissur

DEPARTMENT OF AGRICULTURAL EXTENSION EDUCATION

COLLEGE OF AGRICULTURE

VELLANIKKARA, THRISSUR-680656

KERALA, INDIA

2023

DECLARATION

I, hereby declare that the thesis entitled "***Lease land farming for sustainable livelihood by women collectives in Thrissur district***" is a bonafide record of research done by me during the course of research and that has not previously formed the basis for the award to me of any degree, diploma, fellowship or other similar title, of any other University or society.

Vellanikkara
16/03/2023

Swapna Thomas
2020-11-077

CERTIFICATE

Certified that the thesis entitled "***Lease land farming for sustainable livelihood by women collectives in Thrissur district***" is a record of research work done independently by **Ms. Swapna Thomas (2020-11-077)** under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, fellowship or associateship to her.

Vellanikkara
16/03/2023

Dr. Mercykutty M.J.
(Major advisor)
Professor
(Agricultural
Extension Education)
College of Agriculture
Vellanikkara, Thrissur

CERTIFICATE

We, the undersigned members of the advisory committee of **Swapna Thomas (2020-11-077),** a candidate for the degree of **Master of Science in Agriculture** with major field in **Agricultural Extension Education** agree that this thesis entitled "***Lease land farming for sustainable livelihood by women collectives in Thrissur district***" may be submitted by **Ms. Swapna Thomas,** in partial fulfillment of the requirement of degree.

Dr. Mercykutty M.J
Professor
Dept. of Agricultural Extension Education
College of Agriculture
Vellanikkara

Dr.Binoo P. Bonny
Professor and Head
Dept.of Agricultural Extension Education
College of Agriculture
Vellanikkara

Dr. Smitha Baby
Assistant Professor
Agricultural Extension Education
College of Agriculture
Vellanikkara

Mr. Ayyoob K.C
Assistant Professor
Department of Agricultural Statistics
College of Agriculture
Vellanikkara

ACKNOWLEDGEMENTS

I thank Jesus, for blessing me with health,strength and courage to get through all tedious circumstances and to complete this thesis.

It is with great respect and immense pleasure; I place on record my deep sense of gratitude and indebtedness to ***Dr. Mercykutty M.J****., Professor Department of Agricultural Extension Education and chairperson of my Advisory committee for her sustained and valuable guidance, constructive suggestions, unfailing patience, friendly approach, constant support and encouragement during the entire research period and in preparation of the thesis which will be remembered with utmost gratification forever.*

I sincerely thank ***Dr. Binoo P. Bonny****, Professor and Head Department of Agricultural Extension Education and* ***Dr. Smitha Baby*** *Assistant professor, Department of Agricultural Extension for their solid encouragement, timely support and critical examination of the research work that has helped me for the improvement and preparation of my thesis throughout my research.*

My diction does not seem to be rich enough to provide suitable words to articulate my sincere and heartfelt gratitude to ***Mr.Ayyoob K.C.****, Assistant Professor,Department of Agricultural Statistics, College of Agriculture, Vellanikkara, member of my advisory committee for her scholarly advice and immense help in the statistical analysis of data.*

I express my heartiest gratitude to ***Dr. Jayasree Krishnankutty, Dr. Jiju P. Alex, Dr. Sulaja O.R., Dr. Smitha S.,*** *and* ***Dr. Helen*** *for their ever-willing help, valuable guidance and creative suggestions throughout the period of my study.*

I express my sincere gratitude towards the District Mission Coordinator,District Programme Manager(Agri& Animal Husbandry),Thrissur,Block coordinators of Kodakara,Ollukkara blocks for the help rendered during the time of data collection. I would also like to thank all the women collective farmers and facilitators for their cooperation in conducting the survey.

I do not have words to express my gratitude towards my father, mother, brother, grandfather, grandparents and relatives who supported me by fulfilling all my needs. Their affection and trust were the motivation for me to complete this work on time.

I take this opportunity to express my heartfelt thanks to my friends, classmates who supported and helped in numerous occasions during the course of the work. Words are inadequate to express my heartfelt gratitude to my buddies Reshma, Atheena, Jaizen, Sreejith and Bhagya Lakshmi especially for helping me whenever I was in need. I would also like to thank all my seniors and juniors for their needful help and providing a stimulating and fun filled environment.

I do not have words to express my gratitude to Kerala Agricultural University for financial and technical support for persuasion of my study and research work.

It would be impossible to list out all those who have helped me in one way or another in the successful completion of this work. I once again express my heartfelt thanks to all those helped me in completing this venture in time.

Swapna Thomas

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF ABBREVIATIONS

Abbreviation	Full form
%	Percentage
et al.	And others
GOI	Government of India
SHG	Self Help Groups
km	Kilometer
Sq.km	Square kilometer
Ha	Hectare
i.e.	That is
GDEI	Group dynamics Effectiveness Index
JLG	Joint Liability Groups
NHG	Neighbour Hood Groups
ADS	Area Development society
CDS	Community Development society
IFAD	International Fund for Agricultural Development
FAO	Food and Agriculture organization
PLFS	Periodic Labour Force Survey
DFID	Department for International Development
MKSP	Mahila Kisan Sashaktikaran Pariyojana
NRLM	National Rural Livelihood Mission
GOK	Government of Kerala
ICT	Information and communications Technology
MSSRF	M.S Swaminathan Research Foundation
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
WRI	World Resources Institute
DMI	Disaster Management Institute
PIB	Press Information Bureau
VFPCK	Vegetable and Fruit Promotion Council Keralam
KHDP	Kerala Horticulture Development Programme
CSRF	Cumulative Square Root Frequency Method
BPL	Below Poverty Line

JEVA	JLG Evaluation Agent
SRL	Sustainable Rural Livelihood
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NABARD	National Bank for Agriculture and Rural Development
NHG	Neighborhood Group
IFAD	International Fund for Agricultural Development

LIST OF APPENDICES

Introduction

1.INTRODUCTION

Land is regarded as the most precious and reliable permanent asset, especially true in agrarian and developing nations like India, where it symbolizes both status and subsistence. In economics, it is also one among the four factors of production. In all agrarian economies, there had been a land tenancy system where a landowner rents out their property to others for cultivation in exchange for payment of rent. In India, before independence, land leasing was regarded as a part of the feudalistic and exploitative agrarian system. Therefore, almost all state governments implemented legislation after the independence to either outlaw or regulate agricultural tenancy. For instance, the Kerala Land Reforms Act (1963) has made all existing tenancy systems illegal in the state and forbade any new tenancies from occurring. To liberalise the agricultural market of the country and to promote agricultural efficiency and equity, the central Government has formulated the Model Agriculture and Land Leasing Act in 2016. Though all the States have not yet fully adopted the model law, its speedy implementation is expected to pave the way for a liberalised farmland leasing framework. In Kerala, through *Kudumbashree* initiatives leasing of land is permitted for members of SHGs for improving the livelihood and earnings of the farm families.

The Land challenge in Indian agrarian sector

The land crisis in India is posing a threat to our agrarian sector. The average operational holding size has decreased from 0.22 hectares in 2010–11 to 0.18 ha in 2015–16. (Agriculture census ,2016). Since land is a fixed resource unlike water and solar energy which is renewable, the shrinking size of farm holdings is a great challenge to developing nation like India. Although we cannot “make more land”, we can manage our land in such a way by adopting models that allow land to “become” a renewable resource for future generations. The number of small and marginal farmers has been increasing as a result of India's shrinking farmland.

Regarding the land crisis, Kerala's situation is comparable to national scenario. The emergence of a mind-set that perceives land simply as an asset rather than a productive factor is promoted by social structural changes. The increase in non-

agricultural area and fallow land area over time is a challenge to the state's ecological sustainability and food security. The main changes in its land use pattern are the increase in the area under land utilised for non-agricultural activities and the substitution of food crops for cash crops.

According to land use statistics for 2020–21, out of total geographical area of 38.86 lakh ha, 25.69 lakh ha (66.10 percent) is used for cultivation, and 20.35 lakh ha, being the net area sown (52.37 percent). Around 12 percent of the land is used for non-agricultural purposes, while 27.83 percent is covered by forests. Both the current fallow and the cultivable waste contribute 2.42 percent and 1.4 percent respectively. The cropping intensity has decreased from 128 to 126 percent (Economic Review,2021).

In this scenario, the accessibility of rural poor to land is becoming increasingly crucial for their livelihood. Since the poor cannot afford to buy land on the open market, the two main methods by which they can obtain land are through leasing and government access. The state government of Kerala has recently taken steps for promoting land leasing to women self-help groups for uplifting rural people's livelihoods and their access to opportunities.

Women in agriculture

Women domesticated crop plants first, starting the art and science of farming, according to Dr. M. S. Swaminathan. Nowadays, more men are moving from farm to non-farm work. As a result, Indian agriculture is facing a phenomenon of feminization of agriculture. In order to commemorate women’s role in agriculture, Government of India declared October 15th of every year as *Rashtriya Mahila Kisan Diwas* (National women farmers day) in the year 2016.

Concept and origin of collective farming

The idea of collective action was developed as a result of the collectivization approach used by the Soviet Union between 1929 and 1933 to modernise traditional agriculture and diminish the economic position of the *kulaks* (farmland owners). The forced collectivization's reduced grain yield resulted in significant famines. Collective farming was a common practise in communist collectivities including the USSR, Eastern Europe, China, and North Vietnam. Other non-socialist countries made

significant attempts in the 1960s and 1970s, notably Israel (under the kibbutz) in west Asia, Ecuador and Nicaragua in Latin America, Ethiopia and Tanzania (under the ujaama policy) in Africa, and on a smaller scale in India.

Negative effects of socialist collectivization include the coercive pooling of small peasant farms, the mandatory requisitioning of produce, large-scale production enterprises, the lack of a farmer's voice in management decisions, and both covert and overt forms of socioeconomic and gender inequality. Beginning of 1950s, China had a significant influence on India's cooperative initiatives (Agarwal,2019).

Collective farming in Kerala-*Kudumbashree* mission

In Kerala State, collective farming emerged as a response to the paradoxical situation of Kerala's heavy dependence on neighbouring states for food commodities, even though large areas of cultivable land in the state were kept idle due to waning interest in agriculture. On the other hand, many poor households willing to pursue agriculture as a source of livelihood did not have enough land to do so. For tackling the challenge of food security in the state, more community-focused efforts are required besides technological interventions.

Kudumbashree encouraged women to farm on leased land as the first model of collective farming. Collective farming supports local governments' endeavours to ensure food security while empowering women economically. With the assistance of panchayats and the *Kudumbashree* community network, joint liability groups (JLGs) were founded in compliance with the group model suggested by the National Bank for Agriculture and Rural Development (NABARD) to cultivate fallow land.

In 2020-21, an area of 29,249 ha were cultivated with paddy, vegetables, banana, tubers, and other crops. About 4,800 hectares with paddy, 7,085 hectares for vegetables, 7,076 hectares for tubers, and 9,134 hectares for bananas had been cultivated. About 1,142 hectares, other kinds of crops were planted. The *Kudumbashree* programme is an initiative to alleviate extreme poverty that focuses on women and self-help groups. It was started by the State Government in 1998 with substantial support from NABARD and the Government of India. The SHGs, which are the lowest tier of *Kudumbashree*, are groups of 10 to 20 women members selected from low-income

families. The *Kudumbashree* SHGs are referred to as *"Ayalkoottam"* (Neighbourhood Groups). One of the largest women's movements in Asia, the *Kudumbashree* has 45,85,677 women as members in its 2,94,436 NHGs, 19,489 ADSs, and 1064 CDSs (*Kudumbashree,*2021).

Lease land farming plays a crucial role in restoring fallow and degraded land for cultivation and generating additional income for women. Their increased group negotiating power has also strengthened their socio-political status. Little emphasis has been given to the institutional transformation of agriculture in the global concern of food security, poverty, and sustainable livelihoods. *Kudumbashree* initiative is an excellent example involving an institutional transformation to ensure women's sustainable livelihood security. Since collective action is regarded as a vital tool to address the variety of issues encountered by small and marginal farmers, utilizing the potential of SHGs in agriculture has broader ramifications. The members' knowledge of the operations was improved through various capacity development programs of the mission and other agencies.

Declining land ownership rights among women

Since Kerala had a history of a matrilineal system of inheritance among its population, it is often thought to have relatively egalitarian ownership of assets. However, in reality, this is not true. It is evident from the available micro-level studies that ownership patterns are changing, and women have less control over assets like land. Ownership of assets affects women's economic decisions, especially self-employment, and is an important variable that impacts labour market outcomes. Lack of property rights on agricultural land can lead to multiple issues for women in farming like lack of stability in agriculture as a livelihood option. Measures such as lease land farming will increase women’s access to land as well as help in addressing the growing inequality in the ownership of assets (Working group report on gender and development, State planning board,2022)

Lease land farming: A sustainable livelihood approach for women

The means of a person's livelihood are those that allow them to be sustained, to survive, and to thrive. A person's ability to sustain themselves depends on how and why

they organise to use technology, labour, power, knowledge, and interpersonal connections to alter the environment to meet their needs. Governments and international organisations are increasingly utilising the ideas of sustainable livelihoods, such as the World Bank through its community-driven development approach and its rural development strategy (2002), the International Fund for Agricultural Development (IFAD) through its Rural Poverty Report (2001), and the Food and Agriculture Organization of the United Nations (FAO) through its strategic framework 2005-2015. Frankenberg (1996) has defined livelihood security as "sufficient and sustainable access to income and other resources to enable households to achieve their basic requirements".

A livelihood is sustainable if it can withstand shocks and stresses and recover from them, preserve or improve its capabilities and assets, and give net benefits to other livelihoods locally and globally, both now and in the future, without compromising the base of natural resources. A livelihood's sustainability depends on the interaction of several forces and factors (Chambers and Conway, 1992).

Indeed, until recently, research and policy mainly ignored the topic of women's rights on land and more generally on property. There is a risk that contemporary land reform measures will reinforce the male land ownership and transfer biases observed in many developing nations. Giving women access to land will increase their economic power and improve their ability to fight against political and social gender inequality. This is one of the primary goals of the *Kudumbhasree* mission towards collective farming. With this effort, *Kudumbashree* upgraded women from being farm labourers to farm managers.

Collective farming facilitated access to agricultural areas and the division and distribution of labour in the fields, which would have been difficult with an individual approach. It also contributed to peer learning. It also makes it possible to grow various food crops while distributing agricultural production's costs, risks, and rewards. The produce from group-based farming enabled the women not only to fulfil their consumption needs but also gave them the means to make money. Thus, lease land farming can promote sustainable livelihood option for women in Kerala.

In this context,the present study entitled ‘Lease land farming for sustainable livelihood by women collectives in Thrissur district’ was undertaken with the following objectives:

Objectives

1. Impact of lease land farming on livelihood security as perceived by women farmers and facilitators
2. Profiling the characteristics and their influence on group dynamics
3. Delineation of factors affecting lease land farming and the challenges faced by women farmers

Scope for the study

Numerous studies have been conducted to examine the impact of different programmes for women's empowerment run by the *Kudumbhasree* mission in Kerala. No research has been conducted to examine how lease land farming affects the sustainable livelihood security of women collective farmers in Kerala state. The current study looked into women farmers' perception of the impact of lease land farming on livelihood security and will assist planners and policymakers in improving the situation and developing an effective microlevel strategy. It is crucial to assess whether the women's lease land farming strategy is working as intended and whether the target population has accepted it effectively. To put it briefly, the goal of the current study is to gather the information that will be valuable in paving the way for more widespread adoption of lease land farming as a sustainable rural livelihood option for women farmers. The study also examines the group dynamics of the women collectives and the issues and difficulties faced by the women involved in farming on leased land.

Limitations of the study

Comprehensive coverage was not feasible because this study was conducted as a part of a masters’ research programme in the Thrissur district of Kerala state. It might not be appropriate to generalize the results to other districts. Since the data gathered for this study were the respondents' responses based on their perceptions, recall abilities; the absolute lack of personal bias, preconceptions and prejudices cannot be claimed. Thoughtfully, carefully, and objectively conducting the study was the researcher's

primary concern. The researcher also has a limited amount of funding, time, and expertise.

Organization of the study

The whole thesis is introduced in five sections. The first chapter deals with an introduction, which explains the topic along with the objectives, scope, and limitations of the study. It is followed by the review of the literature which covers relevant research studies related to the present study that is cited in the second chapter. The third chapter is the methodology which deals with the process of investigation, method of data collection, sample size, sampling design, and measurement of independent and dependent variables with statistical procedures. At the same time, the fourth chapter describes results and discussions which explain the results of the study. Finally, the fifth chapter covers the summary and conclusions of the research work. It also includes suggestions for future research. The bibliography, appendices, and abstract of the study are given at the end.

Review of literature

2. REVIEW OF LITERATURE

The primary goal of this chapter is to analyse the study-related concepts. A review of the available literature is crucial because it offers a solid framework for scientific inquiry. It provides an opportunity for a better comprehension of the current investigation and assists in providing a more accurate and scientific interpretation of the results.

A review of research is presented in the following sequence:

2.1 Women in agriculture
2.2 Concept of sustainable livelihood and livelihood security
2.3 The organisational structure of *Kudumbashree* mission
2.4 Profile characteristics of women members involved in collective farming
2.5 Perceived impact of lease land farming on livelihood security of women farmers and facilitators
2.6 Assessment of livelihood security of women farmers and its relation with selected profile characteristics
2.7 Group dynamics of women collectives and its relation with profile characteristics
2.8 Factors affecting lease land farming
2.9 Challenges faced by women collectives in lease land farming

2.1 Women in agriculture

There are two ways to view the concept of the feminization of agriculture. The first one refers to a rise in the number or proportion of farm-related labour performed by women, leading to the feminization of agriculture. This includes women's greater participation as wage employees in non-traditional agro-export production (Dutt 2014). Secondly, in a broader sense which considers how often women define, manage, and carry out the social processes in agriculture. This is how feminization is manifested in the sector. As the agrarian crisis worsens, rural males are being pushed to look for alternative sources of income and to leave their communities in search of better employment opportunities (Tumbe, 2014). This paved way for the ‘feminization of agriculture.

According to data from the PLFS of the Government of India, there were 86.1 million women working in agriculture in 2021, 33.7 million in service sector, and 23.9 million in industry including construction. It has been recorded that agriculture sector

employed 60% of all women workers in the nation in 2019–20, followed by service sector at 23% and industry at 17% (Chand and Singh, 2022). Feminization in agriculture emphasizes the significance for serious attention of women in agriculture and the importance of addressing their issues with the appropriate measures.

2.2 Concept of sustainable livelihood and livelihood security

Chambers and Conway (1991) stated that livelihood assessments covered a variety of activities including stability, crises and coping, relative income, expenditure, credit, and debt of a household.

Ramakrishnan (1993) argued that only through sustainable development, weaker and more vulnerable groups of society can be provided assured stable means of subsistence. He believed that effective resource management required social justice, equity, and a strong sense of the community involvement.

According to DFID (2000), a system's capacities, resources, and activities are what make up a person's livelihood. So, a livelihood was deemed sustainable when it could manage shocks and stress, recover from them, and maintain or increase its capabilities and resources in the present and the future without depleting the natural resource base.

A person's access to resources including food, potable water, healthcare facilities, educational opportunities, and housing is referred to as their socioeconomic position, as reported by the FAO (2008). These include human, physical, social, financial, and natural assets. In general, five categories of assets have been identified as enabling factors for livelihoods.

2.3 The organisational structure of *Kudumbashree*

Since agriculture is a vital activity recognised by the mission along with other initiatives, *Kudumbashree* actively participates in food security programmes. In order to revitalise the agricultural sector, *Kudumbashree* groups start farming on their own or leased in land, which provides employment for women, cultivate fallow land, boosts land productivity, and improves income. The women collectives grow paddy, vegetables, and tubers, all of which directly improve food security. The MKSP Scheme of NRLM's lease land farming program offers assistance to women farmers who have

no land at all. *Kudumbashree* pools uncultivated fields on rent and provide willing cultivators for agricultural operations (Mridula and Alex,2010).

The Neighbourhood Group (NHG), Area Development Society (ADS), and Community Development Society make up the three tiers of organisation (CDS). The lowest tier, NHG, consists of 10 to 20 members who are women from low-income families. The Area Development Society, the second tier, is formed at the ward level by unifying every NHG. The representatives of the women elected from various NHGs make decisions about the ADS's activities. A Community Development Society (CDS), a registered body under the Travancore-Cochin literacy scientific and charitable societies act, is founded at the village panchayats or municipal level by federating all ADSs in the panchayaths (Manoj,2010)

The institutional architecture of *Kudumbashree* is multi-level, involves multiple actors and is hierarchically organized in tandem with the basic layers of women's collectives at different administrative levels. The structure connects to the panchayat and other government departments through government circulars and working level arrangements with project staff, financial institutions and markets. According to Munnangi and Choudhary (2021), it intends to promote holistic land and agricultural development focusing on collective land leasing for women farmers while creating an ecosystem around farm services (from both public and private sources).

2.4 Profile characteristics of women collective members

Socio-personal variables

2.4.1 Age

In their study on women's empowerment through *Kudumbashree*, Sakeer and Anu (2006) found that 53.75 per cent of respondents were between the age of 35 and 55, followed by 43.75 percent of respondents who were under 35, and 2.5 percent of respondents who were beyond 55.

Another study on the empowerment of women through microfinance by Samuel (2006) showed that more than half of participants (57.85%) were middle-aged and that 42.22 per cent were young.

According to Chithra (2011), 25.00% of the women beneficiaries were under 25, while the remaining 8.30% were old. This means that more than half (66.70%) of the beneficiaries were in the middle age category.

Manoj (2012) revealed that 20.00 per cent of the women were below 35 years, 65.00 per cent were within 35-50 years and the rest 15.00 per cent were of above 50 years.

2.4.2 Educational status

Bhuvaneshwari *et al*. (2011) found that peri-urban SHGs had more literate members (36.23%) than rural SHGs (17.90%).

According to Agarwal (2017), among JLG members performing collective farming , only 0.8% of members were illiterate following 22.5% having primary (lower and upper), 11.9% possessing high school education,57.2 percent having higher secondary education and 7.6 percent possessing graduation and above educational qualification

2.4.3 Family size & Family type

Githamma (2007) found in her research that 5 to 8 people make up the average family size, with 83.33 percent of respondents belonged to nuclear families.

According to Biradar (2008), more than half of respondents (60.83%) belonged to small families with five or less individuals, while the remaining respondents (37.17%) belonged to large families (above 5 members).

More than half (68%) of livestock farmers were members of nuclear families, according to Satyanarayan and Jagadeeshwary (2010).

2.4.4 Farming experience

Obadiah (2004) found that medium farming experience made up 61.43 percent of the trained farmers, followed by high (26.43%) and low (12.14%) experience groups. More than half (67.14%) of untrained farmers belonged to the group with medium farming experience, followed by those with low (20.00%) and high (12.86%) groups.

Ahire and Thorat (2007) concluded that 40.0% of paddy growers had more than ten years of farming experience, followed by 34.17% with 5–10 years of farming experience and 25.83% with fewer than five years.

According to Madhushekar (2009), individuals with low (37.50%) and high (21.25%) levels of experience in growing chillies were followed by those with medium (41.25%) and high (41.25%) levels of experience.

2.4.5 Marital status

According to Chetan (2002), majority of women (94.17%) were married, whereas very few, 5.83% women were widows. None of them were unmarried.

According to Bellurkar *et al*. (2003), majority (86.70%) of rural women working in dairy and animal husbandry were married.

2.4.6 Occupation

The major portion of *Kudumbashree* participants were employed in daily labour (20%), self-employment (33.3%), agriculture and allied industries (36.8%) (Nair, 2011).

Meena (2010) revealed that 72 per cent of the respondents had main occupation as agriculture followed by agriculture and other business (28%).

2.4.7 Social participation

According to Sarada *et al.* (2007), more than half (57.00%) of the women in SHGs had low levels of social participation, with the remaining women having high (30.50%) and medium (12.50%) levels.

According to Nitheesh (2009), women engaged in a variety of public activities, some of which were unique to each locality while others were common to all. Attendance at meetings and trainings, engagement in social initiatives, and participation in festivals and social events were followed by everyone. Women were frequently attending gram panchayat meetings and learning how to access government programmes to receive benefits.

Kalyani and Seena (2012) in their study reported that the participation of women in Grama sabhas and public meetings had improved and that their level of participation in meetings had become more active.

2.4.8 Trainings received

Vengatesan and Santha (2003) observed that the majority (89%) of respondents reported that the training given were useful in improving their skill.

Rao (2005) observed that training activities such as traditional farming practices and resource management were given to women members of SHG.

2.4.9 Status of digital literacy among women farmers

The use of ICT was limited compared to its significant potential and was significantly hindered by factors such as illiteracy, inadequate infrastructure (particularly connectivity), low level of usage awareness, availability of very few digital literacy programmes, central site location, and government regulations (Patel,2016).

According to Nayyar *et.al.* (2019), 59-70 percent of men used services like SMS, WhatsApp and photography while only 21-55 percent women did so. Searching for jobs and other information was done by only 5-10 percent of women respondents. About 30-35 percent men engaged in online shopping and paying of bills whereas only 5-10 percent women did so.

Socio-economic variables

2.4.10 Annual income

According to Manjunath's (2010) study, 38.87 % of paddy farmers had low annual incomes. The other farmers had medium (35.42%) and high (25.71%) annual incomes.

According to Venugopalan (2014), just 2% of Kudumbashree unit members make more than Rs.40,000 per year, while the remaining 52.00% earn between Rs. 10,000 and Rs.40,000 annually. This leaves 46.00% of members earning less than Rs.10,000 annually.

In the Kollam district, Chandran (2015) found a substantial and favourable correlation between yearly income and group interaction among farm women engaged in vegetable cultivation**.**

2.4.11 Size of land holding

According to Rangi *et al.* (2002) study in the Fetehgarh Sahib District of Punjab, about two-third of the respondents did not own any land, whereas just one third did. Only small and marginal farmers made up the latter group.

According to Vasudevarao (2003) , the average size of the land was about 3 acres, with wet land taking up the majority of that area in a study in Andhra Pradesh.

Devalatha (2005) stated that 28.33 per cent of SHG members are marginal farmers (farmers with less than 2.5 acres), while 30.83 percent of SHG members lack access to land. The percentage of small farmers (20.83%) and large farmers (20.0%), or those with more than 5 acres, were respectively 20.83 and 20.0%.

It was reported by Satyanarayan and Jagadeeshwary (2010) that 76% of farmers operated small farms, followed by 19% of those who operated medium-sized farms and 5% of those who owned large farms.

According to Arathy (2011), slightly more than half of respondents (54.17%) were marginal farmers, while 30.00 percent were small and 15.83 percent were large farmers.

Socio-psychological variables

2.4.12 Market Orientation

Anitha (2003) reported that 58.75 per cent of the women entrepreneurs had high marketing behaviour and the remaining had medium (41.25%) marketing behaviour.

Pallavi (2006) observed that nearly two-third (58.75%) of the respondents had medium level of market orientation followed by the remaining with high (35.00%) and low (6.25%) market orientation.

A good number of the farming groups in *Kudumbashree* used civil supplies corporation as the marketing channel. Better procurement price and good brand image

could be the two reasons contributed to this practice. The average farmers share in consumer rupee for an independent farmer was 61 per cent while that of *Kudumbashree* collective farming group is 62 per cent. The dynamics in marketing were interpreted and the study concluded that there is not a definite advantage in terms of marketing of produce for a *Kudumbashree* farmer compared to independent farmer (Krishnan, 2012).

Bhagyashree (2014) reported that more than two third (64.44%) of the members of the women Self Help Groups come under medium market orientation, followed by those with high (18.89%) and low (16.67%) market orientation, respectively.

Chalermphol *et.al.* (2014) based on their work on adoption of improved varieties of vegetable crops with pesticide use in Chiang Mai Province stated that for the promotion of vegetable cultivation, appropriate market management plays an important aspect.

2.4.13 Economic motivation

Priya (2003) revealed that 92 per cent of the vegetable cultivators had medium level of economic motivation.

Manjusha (2010) attempted to evaluate the level of empowerment of women community of *Ulladan* tribe of the North Paravur taluk in Ernakulam district of Kerala through the involvement in *Kudumbashree*. It was observed that a significant change has occurred in the socio-economic life of the women groups in the taluk after joining the *Kudumbashree* units.

2.4.14 Risk orientation

In the study on the characteristics of rural women microentrepreneurs, Bhagyalaxmi *et al.* (2003) found that the majority of respondents (75.56%) had a moderate risk orientation, followed by low (15.56%) and high (13.33%) risk orientation groups.

In his study, Suresh (2004) found that the majority of respondents had a medium level of risk-taking aptitude, with low and high levels following at rates of 62.02, 24.58, and 13.34 percent, respectively.

2.4.15 Achievement motivation:

Nair (2011) reported that nearly one-half of the beneficiaries of *Kudumbashree* program of the Kottayam district had a medium level of achievement motivation**.**

2.4.16 Innovativeness

Bhagyalaxmi *et al.* (2003) in her study on profile of rural women micro entrepreneurs observed that majority (69.44%) of the respondents had medium innovativeness followed by 15.56 and 15.00 per cent of the respondents having high and low innovativeness, respectively.

Suresh (2004) in his study on entrepreneurial behaviour of milk producers in Andhra Pradesh revealed that the milk producers in the district had medium, high and low innovativeness in the order of 55.00, 24.58 and 20.42 per cent, respectively.

2.4.17 Environmental orientation

Logananthan (2002) revealed that 54 percent of the farmers diverted to organic farming mainly due to environmental consciousness about environmental safety and the ill effects of hazardous practices followed in modern farming.

Sasidharan (2015) revealed that majority of the vegetable farmers (75%) had high environmental orientation whereas 25 percent of the farmers had low environmental orientation.

2.4.18 Attitude towards collective farming

It was reported that among the members (and non-members), the proportion of those who had positive attitude to farming was low (Sreekumar,2001) in an evaluation study of central scheme of women in agriculture in Palakkad district.

2.4.19 Credit orientation

The majority of farmers of SHGs in Thiruvananthapuram district, studied by Devi (2003), had a medium level of credit orientation and their credit need were more or less met by the loan amount. The farmers reported that they would not have undertaken extensive farming if the micro credit supply was not present.

A medium level of credit orientation was reported for the banana farmers of the Thiruvanathapuram district studied by Thasneem (2016).

2.4.20 Scientific orientation

Kiranmaye (2013) stated that a little more than half of the chilli farmers had medium (53.33%) scientific orientation followed by those with low (26.67%) and high (20.00%) scientific orientation.

Communication variables

2.4.21 Mass media exposure

Fami (2000) from his study in Iran revealed that 48.00 per cent of rural women had medium level of exposure to mass media, followed by 33.00 per cent had low mass media exposure and remaining 19.00 per cent of had high mass media exposure.

2.4.22 Extension agency contact

Savitha (2004) in her study on the role of rural women in animal husbandry in Dharwad reported that 59.00 per cent of respondents had low extension participation followed by high (38.00%) and medium (3.30%) level of extension participation.

Singh (2011) found that two fourth (42%) of the farm women had medium contact with the extension agency and 34 per cent and 24 per cent had high and low contact respectively for seeking information about improved agricultural practices and technologies.

2.5 Perceived impact of lease land farming on livelihood security of women farmers and facilitators

The dependent variable is how women farmers perceive the impact of lease land farming on their livelihood security. The perception is a subjective indicator of the impact they perceive lease land farming has on the livelihood security. Numerous studies have emphasised the significance of a farmer's perception of a sustainable livelihood.

According to Mohindra (2003), the SHGs enabled rural women in Kerala who were restricted to their homes due to societal constraints with the chance to leave their

homes and engage in community activities. Many women had obtained the opportunity to travel for various purposes in addition to attending meetings and SHG events.

While the broader definition of food security considers it as merely sufficient food production, it is a multidimensional concept involving the aspects of availability, accessibility, absorption of nutrition, and environmental sustainability (Nath, 2007).

The food security of the respondents before and after joining the *Kudumbashree* program was recorded by Devi (2008) for the members of the Thiruvananthapuram, Ernakulam, and Malappuram districts. A significant change was found in Thiruvananthapuram and Ernakulam. In Malappuram, the change was not significant since the rich-poor divide was high in the district. Family size was bigger and the poor needed more support to undertake a micro enterprise with the provision for effective marketing of the products. In her study on *Kudumbashree* members of Thiruvananthapuram, Ernakulam, and Malappuram districts, majority of the members were dependent on primary health care centre.

Nair (2011) reported that the majority (98.30%) of members she studied in the Kottayam district showed betterment in social status after becoming a member of *Kudumbashree.*

2.6 Assessment of livelihood security of women farmers

In order to analyse livelihoods and disaster vulnerability, the Disaster Mitigation Institute (DMI) created a victim security model (Twigg, 2001). The model's essential components consist of:

- Food Security: This concept takes into account the tangible aspects of food production, distribution, and consumption as well as the broader socioeconomic aspects of food access.

- Water security: includes physical aspects (source, supply, quality, use) and socio-economic aspects (access, ownership)

- Habitat security includes housing location, quality, and broader issues like planning and funding.

- Occupational security: this comprises financial stability, stable employment, the development of assets, productivity, and working conditions.

According to Baby (2005), marginal farmers and labourers in Kerala's Malappuram and Ernakulam districts had a medium level of the Livelihood Security Index (LSI), compared to small farmers, who had a high level.

2.6.1 Food and Nutritional security

While the broader definition of food security considers it as merely sufficient food production, it is a multidimensional concept involving the aspects of availability, accessibility, absorption of nutrition, and environmental sustainability (Nath, 2007).

Pratap (2013) in his study conducted in Uttar Pradesh found that, if the right environment is created and the agripreneurs are provided with good infrastructure, technological support, and timely availability of credit, it could improve food production and ensure food security along with an increase in income and quality of life of the farmers.

2.6.2 Economic security

Argade (2014) found out the economic security of integrated farmers in his study. He found that the one-third (33.33%) of the respondents had high level of economic security followed by medium level of economic security (30.00%). It was also noted that almost 50.00 per cent of the respondents had high level of economic security. This might be due to income generated through integrated farming systems throughout the year made them economically secure.

2.6.3 Social security

The key to build an empowered society is active social participation (Reid,2000).

Sreedaya (2000) in her study on Self Help Groups in vegetable production in Thiruvananthapuram district opined that, cosmopoliteness and high social participation of members of SHGs would influence their behaviour and as a result they showed more co-operation with the members of their group.

Beena and Sari (2014) reported that *Kudumbashree* programme dramatically changed the economic, political, and social life of its beneficiaries. They could actively

participate in Grama Saba and public meetings, and had become more confident in banking, money transactions and had also improved their skills in coordination of meetings, communication, public speaking etc.

2.6.4 Health Security

Devi (2008) recorded in her study on Kudumbashree members of Thiruvananthapuram, Ernakulam, and Malappuram districts that, majority of the members were dependent on primary health care**.**

Krishnakumar and Sanandakumar (2016) reported that, Kerala is facing a health crisis of increase in cancer, kidney and liver diseases among its people due to increased wealth, changed lifestyles, new food habits, pesticide residues in food products, obesity and rising incidence of diabetes centre.

2.6.5 Agricultural resource security

Argade (2014) in his study among integrated farmers found that agricultural security of small and marginal farmers is more important for sustaining their livelihood. The agricultural security of small and marginal farmers could be achieved through increasing crop and animal productivity, irrigation facilities and market accessibility. Almost one-third (31.25%) of the respondents had low level of agricultural security followed by medium level of agricultural security (25.00%).

2.7 Group dynamics of women collectives

Stoner et al. (1996) while exploring leadership functions in group dynamics came to the conclusion that task functions are essential for a group to perform effectively. Majority of the respondents were under medium category of task function.

More harmonious behaviour in group members is a result of cohesiveness (Kumaran, 1997).

Less than one-fifth of the farmers (56.11%) who participated in KHDP self-help groups were found to be in the high category for subdimension participation, according to Kumar's (1999) study. Additionally, he found that participation had a major impact on how well each member of the group performed.

According to Purnima (2005), 35.0% and 25.0% of respondents were in the low-level and high-level categories of group dynamics effectiveness, respectively, while 40.00% in the medium-level category. The majority of respondents (39.58%) were in the high category of group leadership, while 32.08 and 28.34% in the intermediate and low categories, respectively. Less than one-half (37.50%) of respondents were found to have a medium degree of interpersonal trust, whereas 32.92% and 29.58% of respondents, respectively, had a medium level and low level of interpersonal trust.

According to Bhatt (2009), Group dynamics effectiveness is a multivariate phenomenon which is explained by a wide spectrum of factors, that contribute to it. In a small group, situation, these factors are so intricately associated with each other that they should not be viewed as separate entities for the study. Hence a holistic view of all these contributing factors would give a total picture of group dynamics with regard to a self-help group.

2.8 Factors affecting lease land farming

Rental restrictions in India are significantly affecting productivity and equity, according to an analysis of state-level statistics and a national survey. Land rental restrictions restrict the possibility of efficiency-enhancing rental transactions that help disadvantaged farmers (Deininger *et al.*2007)

In order to increase women's access to land and promote economies of scale, the *Kudumbashree* model, which involves women farmers engaging in collective cultivation, aims to provide women financial and decisional freedom in farming. In this evolving environment of Indian agriculture, it has been claimed, most persuasively by Agarwal (2010), that women engaging in collective farming can be especially useful. It can help women who are socially disadvantaged, such as those who have less access to land and don't have a strong sense of identification as farmers. In addition, women now have better access to loans as well as marketplaces for inputs and goods from which they may have previously been excluded.

If land leasing is made legal and as a result more land becomes available for leasing through a vibrant land lease market, lease farming by poor and marginalised

women can be a significant source of livelihood or supplementary income for them, according to Haque and Nair (2014).

According to Agarwal (2018), collective farming in *Kudumbashree* is preferable to individual farming in terms of money earned and potential to further women's empowerment. Even after accounting for inputs and environmental conditions, JLG beats both the Telangana group farming experiment and the individual farms found in Kerala (JWIF). The mean income of 120,000 rupees was numerically assessed from collective farming.

2.9 Challenges faced by women collectives in lease land farming

Thomas (1998) found that the main challenges experienced by respondents were lack of funding, lack of high-quality planting materials, and insufficient training in his study on the role of farm women in planning, managing, and executing watershed development programmes.

According to Mehala (2012), the majority (90%) of respondents reported that lack of financial assistance and insufficient funds were the main issues for both men and women SHG.

Research on the role of self-help groups in empowering rural women in Kerala was undertaken by Minimol *et al.* in 2012. The results of the study showed that several group-related issues were assessed for presence. Examples include barriers to participation, drop - out rates, disagreements, and a lack of openness. Nearly 15% of the members said that there were issues, including disputes amongst members and absence from meetings. Peer groups that operated at a low level testified about irregular meetings, poor records, non-accessibility to records and absence of internal audit.

Methodology

3. METHODOLOGY

The research methodology is a way, method, or process in which various stages of analysis is employed systematically to solve research problem and how research is done scientifically (Kothari and Gaurav,2017). Research methodology is the blueprint of the research architect. The present research was carried out on the topic "Lease land farming for a sustainable livelihood by women collectives in Thrissur District." This part of the thesis explains the approach, principles, and procedures to be followed in conducting a study in the field. It has been organized under the following sub-heads;

3.1 Research design

3.2 Locale of the study

3.3 Sampling procedure

3.4 Operationalization of variables and their measurements

3.5 Methods used for data collection

3.6 Statistical tools and software used for the analysis of data

3.1 Research design

Appropriate research design is the prime need of any research investigation. It is a plan, structure, and strategy of investigation conceived to obtain answers to research questions and control variance (Kerlinger, 1983).

'Ex - post facto' research is a systematic empirical inquiry in which the scientist does not have direct control over independent variables because their manifestations have already occurred (Kerlinger, 1983). Since the objective of the study is to analyze the impact of lease land farming on the sustainable livelihood of women collective farmers, an ex post facto research design was followed since the variables chosen for the study were already occurred, and there was no scope for manipulation of any variable.

3.2 Locale of the study

The study was conducted in Thrissur district. The district ranks first in terms of area (2732.15 Ha) under lease land farming by women collectives (*Kudumbashree,*2021). The lease land farming by women collectives is under the umbrella scheme of MKSP, a sub-component of NRLM and *Kudumbashree* is the Programme implementing agency in Kerala. No similar research was conducted in the district regarding the impact of lease land farming on livelihood security. The researcher had an intimate knowledge of the district compared to other districts, as the researcher hails from central Kerala.

3.2.1 Brief description of Study area

Thrissur is known as the cultural capital of Kerala, and the land of *Poorams*. It is one of the revenue districts of Kerala situated in the central part of the state. Spanning an area of about 3,032 km^2, Thrissur district is home to over 10% of Kerala's population. The districts of Palakkad and Malappuram are to the north, and Ernakulam and Idukki are to the south border of the Thrissur district. The Arabian Sea lies to the west and Western Ghats stretches towards the east. It is situated in southwestern India (10.52°N 76.21°E) and in central Kerala.

Figure 1. The map of Thrissur district

Table 3.1 Demographic details of Thrissur

Area	**3032 Sq Km**
Population	**31,10,327**
Literacy rate	**92.27%: Male 95.11%: Female**
No. of Revenue Divisions	**2**
No. of Corporations	**1**
No. of Municipalities	**7**
No. of Taluks	**7**
No. of Blocks	**16**
No. of Panchayats	**86**
No. of Villages	**255**

Source: Census,2011

3.3 Sampling procedure

This step is of great importance, as it has the purpose of limiting to the sub-divisions of the selected district, the blocks, panchayats, women collectives, and finally, the respondents from the selected women collectives.

3.3.1 Selection of Blocks

Two lists of blocks in Thrissur district with more area under banana and vegetable cultivation were prepared separately. From the list, one each block were selected randomly, representing more area under banana and vegetable lease land cultivation.

3.3.2 Selection of Respondents

From the selected two blocks, two panchayats each were selected randomly. A list of women collectives engaged in banana and vegetable cultivation was collected from the respective CDS of the selected panchayats.From that list, by employing simple

random sampling method, fifteen women joint liability groups each were selected, comprising 60 women farmers each who cultivate banana and vegetables under leased land. Another respondents of 30 facilitators were also randomly selected. Thus, the total sampling size of the study includes 150 respondents, which comprised of 120 women farmers and 30 facilitators.

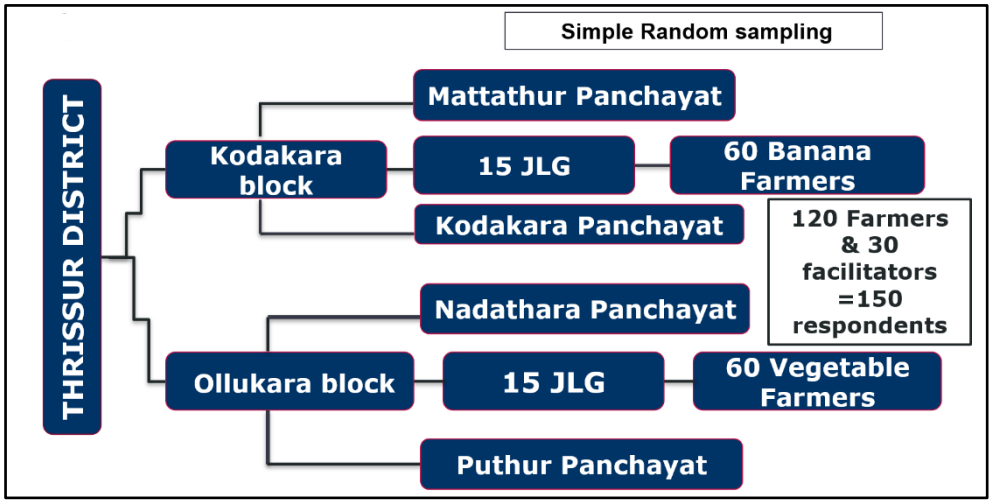

Figure 2. Pictorial representation of sampling procedure

3.4 Measurement and operationalization of variables

Based on the review of past studies and discussion with experts of the university, suitable measurement methods were selected for the variables and used with appropriate modification, where ever necessary.

Operationalization and measurement of selected variables

3.4.1 Independent variables

The independent variables were grouped into socio-personal, socio-economic, communication, psychological, situational, etc., based on their nature and characteristics. A total of 30 independent variables were included in the study.

Table 3.2 Measurement of independent variables

Sl.No.	Variables	Measurement
Socio-personal variables		
1	Age	Procedure by Census,2011, GOI
2	Education	Procedure by Seby,2017 with modification
3	Family size and type	Procedure by Venkataramaiah(1990)
4	Marital status	Unmarried/Married/Widow
5	Farming experience	Procedure by Sharath (2018)
6	Occupation	Procedure by Vihari (2018)
7	Social participation	Procedure by Seby (2017)
8	Trainings Received & Utility of farm women training programmes	Procedure by Kumar (2017) and Scale of Upadhyay and Hansra (1982) with modification
9	Status of digital literacy	Procedure by Nayyar (2017) with modification
Socio Economic variables		
10	Annual income	Procedure by Seby(2017) with modification
11	BPL category	BPL/APL
12	Size of landholding	Procedure followed by Agricultural Census,2016
13	Land ownership status	Land owned by Women/Spouse/*Purambokku*
Socio- psychological variables		
14	Market orientation	Scale developed by Chandra (1989)
15	Economic motivation	Scale developed by Supe (1969)
16	Risk orientation	Scale developed by Sreeram (2013)
17	Achievement orientation	Scale developed by Alexander (1996)
18	Innovativeness	Scale developed by Archana (2013)
19	Credit orientation	Scale developed by Beal and Sibley (1967)
20	Scientific orientation	Scale developed by Supe (1969) modified by Shivaji (2019)

21	Environmental orientation	Scale developed by Menon (1995)
22	Attitude toward collective farming	Scale developed by Menon (1993)
Communication variables		
23	Mass media exposure	Scale developed by Krishnan (2019)
24	Extension agency contact	Scale developed by Chouhan (2018)
Situational variables (Lease land Characteristics)		
25	Size of leased in land	Procedure followed by Agriculture census,2016
26	Mode of rent payment	Cash/Both cash and kind
27	Status of leased in land	Fallow/cultivable land before leasing
28	Leasing history	Leased in from same person/Different person in more than 3 years
29	Rent amount paid by lessee	Rs.
30	Status of soil testing	Y/N

3.4.1.1 Socio-personal variables

These variables included age, education status, social participation, experience in farming, family type and family size etc. which have been discussed as under.

3.4.1.1.1 Age

It was operationally defined as the chronological age of the respondent at the time of the survey. The number of completed years of age of the respondent was given as a score. The respondents were grouped into young, middle, and old age groups according to the procedure followed in Census Report, 2011(GOI) using frequency and percentage.

Sl. No.	Category	Age (Years)
1	Young	Less than 35 years
2	Middle	35-50 years
3	Old	Above 50 years

3.4.1.1.2 Education

It was operationally defined as the number of years of formal schooling completed by the respondent. The respondents were categorized into different categories based on the scoring procedure followed by Seby (2017) with modification.

Sl. No.	Category	Score
1	Functionally literate	0
2	Primary school	1
3	SSLC	2
4	Higher Secondary	3
5	Diploma	4
6	Degree and above	5

3.4.1.1.3 Family Size and Type

Family size can be operationally defined as the total number of members in the respondent family living together at the time of the study. The scoring procedure followed by Venkataramiah (1990) was used for the study.

The families were classified into two categories, viz, nuclear and joint family, based on the composition of the family. The scoring procedure followed by Venkataramiah (1990) was used. The nuclear family is defined as family with parents

and their children. A joint family consists of a husband, wife, and their married and unmarried children based on blood relations of a large number of people and consisting of a large group of blood relatives with a fringe of spouses.

Category	Number of members	Score
Small	Up to 3	1
Medium	4-6	2
Large	7-9	3
Very large	More than 9	4

Type of family	Score
Nuclear	1
Joint	2

3.4.1.1.4 Marital status

Marital status refers to whether the respondent women were married or unmarried. The women were grouped into three categories as follows.

Category	Score
Unmarried	1
Married	2
Widow	3

3.4.1.1.5 Farming experience

It refers to the number of years women farmers had been engaged in farming. Later the respondents were categorized based on the scoring procedure developed by Sharath (2018) with modification. The respondents were categorized into low experience (Below 5 years), Medium experience (5-10 years), and High experience (Above 10 years).

Category	Score
Low (Below 5 years)	1
Medium (5-10 years)	2
High (Above 10 years)	3

3.4.1.1.6 Occupation

Occupation can be operationally defined as the means of livelihood of the respondent, from which the respondent is receiving her source of income for living. The scoring procedure followed by Vihari (2018) was modified for the present study.

Category	Score
Agriculture only	1
Agriculture and animal husbandry	2
Agriculture and private employee	3
Agriculture and self employed	4
Others	5

3.4.1.1.7 Social participation

Social participation refers to the degree of involvement of respondent in any formal organization either as a member or an office bearer. Procedure followed by Seby (2017) was used with modification for the present study. The total score was derived by summating the membership status and extent of participation scores of an individual. Based on the total score obtained, respondents were categorized into low, medium and high using CSRF method.

Membership status

Membership status	Score
Not a member in any organization	0
Member in any one of the organizations	1
Office bearer	2

Extent of participation

Never	0
Occasionally	1
Regular	2

3.4.1.1.8 Trainings received

It is operationally defined as the total number of trainings received by the respondents. The scoring procedure followed by Kumar (2017) with modification was used for the current study. The scoring was assigned as 0 to those who did not attended training and 1 to those who attended training.

SI. No.	Category	Score
1	Attended Training	1
2	Not attended Training	0

3.4.1.1.8.1 Utility of farm women training programmes

Ratings were given to utility of training programs by respondents. It is operationalized as the opinion of farm women about the usefulness of training programs in serving various purposes. It was based on a 2-point continuum with scores of 1 and 0 to the usefulness and not usefulness of training following the procedure used by Upadhyay and Hansra (1982) with slight modification. The responses were collected against each of the response categories. Further, the utility scores of each respondent were worked out by summing up the scores obtained on five dimensions of this variable.

On the basis of total scores obtained by the respondents, they were classified into three categories viz. low, medium and high utility using CSRF method.

3.4.1.1.9 Status of digital literacy among women farmers

The standardized operational definitions of digital literacies consist of functions and operations a person should be able to accomplish with computers and the internet (Lankshear and Knobel, 2008). The measurement was done using procedure by Nayyar *et.al*. (2017) with modification.

3.4.1.1.9.1 Possession of digital gadgets

SI. No.	Category	Score
1	Keypad Phone	1
2	Smartphone	2
3	Computer	3

3.4.1.1.9.2 Access to the internet connectivity

SI. No.	Category	Score
1	Farm women having access to the internet	1
2	Farm women not having access to the internet	0

3.4.1.1.9.3 Internet speed

SI. No.	Category	Score
1	Good	1
2	Moderate	2
3	Poor	3

3.4.1.1.9.4 Technical help on usage of digital devices

SI. No.	Category	Score
1	Independently	1
2	With the help of family and friends	0

3.4.1.1.9.5 Frequency of usage of mobile applications

The mobile applications provide a technology-based platform for citizens to connect, transform and shape their own lives for the better. Downloading different applications on mobile phones alone doesn't mean that the respondents used them. The respondents were asked to rank their frequency of usage as frequently, occasionally, and never. The scoring was done as follows:

SI. No.	Category	Score
1	Frequently	1
2	Occasionally	2
3	Never	0

3.4.1.2 Socio-economic variables

The Socio-economic variables include annual income, size of land holding etc**.**

3.4.1.2.1 Annual income

Annual income is operationally defined as the total earnings made by the farmer and the members of the family in a year from all the sources for living in rupees. The scoring procedure followed by Seby (2017) was used with modification.

Category	Score
Low (Upto 50,000/-)	1
Medium (50,001-1.5 lakh)	2
High (Above 1.5 lakh)	3

3.4.1.2.2 BPL category

Below Poverty Line is a benchmark used by the Government of India to indicate economic disadvantage and to identify individuals and households in need of government assistance and aid. The scoring was done as follows:

BPL	1
APL	2

3.4.1.2.3 Size of landholding

Landholding refers to the extent to which the respondent household possesses sufficient land with the right and control over it to utilize its resources for a secure living. This was measured by directly asking the respondents to indicate the total land area possessed by the household and was recorded. Depending on the size of the landholding, the respondents were classified into five categories based on the Agricultural census, 2016.

Marginal (Less than 1 Ha or 2.5 acres)	1
Small (1.01 -2.0 Ha or 2.5 -4.9 acres)	2
Semi Medium (2.01 - 4.0 Ha or 4.9-9.8 acres)	3
Medium (4.01 -10 Ha or 9.8 -24.7 acres)	4
Large (Greater than 10 Ha or 24.7 acres)	5

3.4.1.2.4 Land ownership status

It refers to the ownership status of land and is recorded by directly asking the respondent, and the scoring is done as follows.

Land entitled by women farmer	1
Land entitled by spouse	2
Purambokku (Untitled land)	3

3.4.1.2 Socio-psychological variables

This set of independent variables includes the following variables:

3.4.1.2.1 Market orientation

Successful farming depends to a great extent on the ability of the farmer to make intelligent buying of inputs and selling of the produce. The market orientation of the respondents was measured with the help of a scale developed by Chandra (1989) with modification. The market orientation scale consisted of seven items, six positive and one negative statement. The response for each statement was rated on a 5-point continuum ranging from 'strongly agree' to 'strongly disagree.' The scores were reversed for negative statements.

3.4.1.2.2 Economic motivation

Supe (1969) operationalized the concept of economic motivation as the pursuit of profit maximization and the relative importance farm women place on economic goals. The scale was composed of five statements, one of which was a negative statement. Economic motivation scale has a maximum score of 25 and a minimum score of 5. The 5-point scale from "strongly agree" to "strongly disagree" was used to score respondents' agreement or disagreement with each statement. For negative statements, the scores were reversed.

3.4.1.2.3 Risk orientation

It is defined as the degree to which a farmer is risk- and uncertainty-oriented and ready to deal with the issues presented by typical marketing uncertainties. It refers to the degree to which a person will accept risk while considering a course of action with reasonable chances of success. The scale constructed by Sreeram (2013) was used with due modifications to measure the respondents' risk orientation. The 5-point continuum scale had five statements, one of which was negative. Respondents were divided into three categories based on their overall scores: "less risk-oriented," "moderately risk-oriented," and "very risk-oriented."

3.4.1.2.4 Achievement motivation

Achievement motivation of the respondent is operationally defined as a social value that emphasizes a desire to do well, uphold a high standard of excellence and a sense of accomplishment. The scale developed by Alexander (1996) with suitable modifications was used to measure this variable. This scale consisted of five statements, of which one is negative. The scoring was done using a five-point continuum ranging from ‘strongly agree’ to ‘strongly disagree with scores 5 to 1 respectively for positive statements respectively, whereas scoring was reversed in case of negative statements.

3.4.1.2.5 Innovativeness

Innovativeness is defined as the earliness of farmers in adoption of the new ideas when compared to other members of the society. It was measured using a modified version of the scale constructed by Archana (2013) and responses were recorded on a three-point continuum, namely agree, neutral, and disagree. For positive statements, the score was 3,2,1, and for negative statements, the score was reversed. Four of the five items were positive, and one was negative. After that, the respondents were categorized as having a low, medium, or high level of Innovativeness.

3.4.1.2.6 Credit orientation

According to the operational definition of credit orientation, respondents were motivated to take advantage of financial institutions for credit, which may help them to improve their financial status. The respondent's borrowing and repayment patterns were

taken into consideration. For measuring this variable, the Beal and Sibley (1967) scale was appropriately modified and administered. The scale has five positive statements, each of which is given a score on a two-point continuum.

3.4.1.2.7 Scientific orientation

It refers to the degree to which a farmer is committed to the use of scientific techniques in farming. The scientific orientation was measured using the scale developed by Supe (1969), which Shivaji (2019) slightly modified. Strongly Agree, Agree, Neutral, Strongly Disagree, and Disagree were assigned scores of 5, 4,3,2, and 1, respectively, for positive statements. In the case of negative statements, the scoring was reversed. One of the five statements in the scale was negative. Total respondent scores were calculated from the scores assigned to each statement and based on that; the respondents were categorized into low, medium, and high categories.

3.4.1.2.8 Environmental orientation

This is operationalized as the degree to which a farmer is concerned about his environment. This variable is having more importance in this study, since this study is concerned with lease land farming, and the farmer is cultivating not in his own field. The scale constructed by Menon (1995) is used to measure this variable with due modifications. The scale consisted of five statements and uses a three-point continuum ranging from Agree, Neutral to Disagree, scoring 3,2 and 1.

3.4.1.2.9 Attitude towards collective farming

Attitude towards group farming was operationally defined as the degree of positive or negative effect of the farmers towards the group farming. The scale developed by Menon (1993) was used with slight changes. The irrelevant statements were edited out, and finally, five statements, of which one was negative, were arranged randomly to form this arbitrary measurement scale. The scale uses a three-point continuum ranging from Agree, Neutral to Disagree scoring 3,2, and 1.

The above-mentioned socio-psychological variables were categorized into low, medium, and high using the cumulative square root frequency method.

3.4.1.3 Communication variables

Communication variables include extension agency contact and mass media exposure.

3.4.1.3.1 Mass media exposure

Mass media is a form of communication which influence a large number of people within a short span of time. Exposure of the women JLG member to mass media viz., radio, television, newspaper, farm publications, and social media, were taken into consideration here. The scale developed by Krishnan (2019) was used with due modifications for measuring this variable. The responses obtained were recorded on a three-point continuum according to the frequency of exposure viz., regular, occasional, and never with scores of 2,1 and 0, respectively. The total score of mass media exposure is obtained by summating the individual scores. The respondents were categorized into three groups: low, medium and high using cumulative square root frequency method (CSRF).

3.4.1.3.2 Extension agency contact

Contact with extension agency refers to the number of times a person has contacted agriculture extension agents in Government Departments, Krishi Vigyan Kendra , etc. It is the degree of involvement by the farmers with extension personnel of different extension agencies. The scale developed by Chouhan (2018) was used with some modifications. Responses were recorded on the three-point continuum as regularly, occasionally, and never and scored as 2, 1 and 0. The respondents were classified into three categories as low, medium, and high using cumulative square root frequency method (CSRF).

3.4.1.4 Situational Variables: Lease land characteristics

3.4.1.4.1 Size of leased in land

The landholding area taken leased for collective farming was scored as follows following Agricultural census (2016).

3.4.1.4.2 Mode of rent payment of leased in land

Marginal (Less than 1 Ha or 2.5 acres)	1
Small (1.01 -2.0 Ha or 2.5 -4.9 acres)	2
Semi Medium (2.01 - 4.0 Ha or 4.9-9.8 acres)	3
Medium (4.01 -10 Ha or 9.8 -24.7 acres)	4
Large (Greater than 10 Ha or 24.7 acres)	5

The rent paid by the lessee to the lessor was either in the form of cash or kind. The kind payment is mainly the agricultural produce from leased land.

Cash	1
Both Kind and Cash	2

3.4.1.4.3 Status of leased in land before collective farming

Fallow land before collective farming	1
Cultivable land before collective farming	2

3.4.1.4.4 Leasing history

Leased in from the same person for more than 3 years	1
Leased in from different person for more than 3 years	2

3.4.1.4.5 Rent amount paid by the lessee

Below 25,000	1
25,000- 50,000	2
Above 50,000	3

3.4.1.4.6 Status of soil testing of leased in land

A score of 1 is assigned to women farmers who have done soil testing, and 0 is assigned to those who did not do soil testing on leased land.

3.4.2 Dependent variables

3.4.2.1 Perceived impact of lease land farming on livelihood security of women farmers

3.4.2.1.1 Perceived impact of women farmers and facilitators

According to Ray (1990), perception is an activity through which an individual becomes aware of objects around him and events taking place. The same situation may be perceived differently by individuals due to differences in their experiences and cognitive style. It is selective, and one perceives what he/she wants to perceive (Preethi *et al.* 2014). Perception in the present study is operationally defined as the interpretation of facilitators and farmers regarding the livelihood security of women collective farmers who were doing farming in lease land. Perception is the process whereby sensory input is organized into meaningful experiences. An attempt was made to assess the impact of collective lease land farming on women farmers as perceived by farmers and *kudumbhashree* facilitators.

The perceived impact score of farmers was measured by using self-anchoring perceived impact assessment scale following procedure of Padaria (2014) with modification. The method of summated rating scale suggested by Likert (1932) and Edwards (1969) was followed. The perceived impact assessment arbitrary scale consisted each of five statements under each dimension like food and nutritional, economic, agricultural, social and health security. The scale followed a five-point continuum. The components such as food and nutritional, economic, agricultural resource, social and health security were studied under livelihood security. Respondents were asked to indicate a score from 1 to 5 against each item where they perceived themselves on the livelihood parameter. The perceived impact score for each dimension was also calculated. The overall scores of respondents were determined by adding up the scores against all the dimensions.

The perceived impact score of facilitators was measured by using self-anchoring perceived impact assessment scale following procedure of Padaria (2014) with modification. The scale consisted of 10 statements, measured in a five-point continuum representing strongly agree, agree, undecided, disagree, and strongly disagree with scores of 5, 4, 3, 2, and 1, respectively and scoring was reversed for negative statements. The maximum and minimum possible scores were 50 and 10, respectively.

Perceived impact score of a respondent can be calculated by using the following equation:

$$\text{Perceived impact score} = \sum \frac{\text{PIFS+PIES+PIAS+PIHS+PISS}}{\text{Total maximum score}} \text{ X } 100$$

Where,

PIFS stands for perceived impact score of food and nutritional security

PIES stands for perceived impact score of economic security

PIAS stands for perceived impact score of agricultural resource security

PIHS stands for perceived impact score of health security

PISS stands for perceived impact score of social security

$$\text{Perceived impact score of facilitators} = \frac{\text{Individual score}}{\text{Maximum Score}} \text{ X } 100$$

3.4.2.1.2 Assessment of livelihood security index of women farmers

Rural livelihood security

It was operationalized as the ability of farm families to get adequate access and availability of income and other resources to meet basic needs of food, nutrition, health facilities, clean environment, habitat facilities, educational opportunities, community participation, social integration, etc.

A livelihood is sustainable when people can cope with and recover from shocks and crises (e.g., seasonal, environmental, and economic) and can maintain or enhance their capability and assets both now and in the future while not undermining the natural resource base. The livelihood security index (LSI) developed by Argade (2014) was used to compute livelihood security of the women collective farmers performing lease land farming with due modifications.

Livelihood Security Index (LSI)

Dimensions of LSI

Livelihood security has multidimensional aspects. It includes seven dimensions: Food and nutritional security, Economic security, Agricultural resource security, Health security and Social security. The identified dimensions of LSI were operationalised as given below:

i) Food and nutritional security was operationalized as the extent of food availability, accessibility, affordability, and quality at the household level. Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

ii) Economic security was operationally defined as the availability and access to financial sources and accumulation of financial capital. It was measured in terms of savings, insurance, indebtedness, employment status, and total annual income of the household.

iii) Agricultural resource security: It was operationally defined as the availability and access to the resources for agricultural production optimization, i.e., the extent to which agricultural production of a farm is sufficient for a women farmer's sustainable livelihood.

iv) Health security: It was operationalised as the extent of availability, accessibility, affordability and quality of health facilities at village level. It refers to the health status and capacity of respondents to afford health facilities as per the requirement.

v) Social security: It was operationally defined as the social status of the respondent at home and outside in terms of the respondent's family education status, farming experience, training received, social participation, trust & solidarity and savings among the members of the society which forms social safety network for improving their livelihoods.

Argade (2014) used the Normalized rank order method suggested by Guilford (1954) to determine the scale values.

Table 3.3 Scale values of dimensions of LSI

Sl.No	**Dimensions of LSI**	**Scale values**
1	Food and nutritional security	6.50
2	Economic security	6.63
3	Agricultural resource security	6.93
4	Health security	6.03
5	Social security	4.87
	Total	**30.96**

Computation of the composite livelihood security Index

The total score of each dimension was converted into a unit score by using simple range and variance as given below,

$$U_{ij} = \frac{Y_{ij} - Min\ Y_{ij}}{Max\ Y_j - Min\ Y_j}$$

Where,

U_{ij} = Unit score of the i^{th} respondents on j^{th} dimension

Y_{ij} = Value of the i^{th} respondent on the j^{th} dimension

Max Y_j = Maximum score on the j^{th} dimension

Min Y_j = Minimum score on the j^{th} dimension

Thus, the score of each dimension ranges from 0 to 1, i.e., when Y_{ij} is minimum, the score is 0, and when Y_{ij} is maximum, the score is 1. Then, the unit scores of each respondent were multiplied by the respective scale value of each dimension and summed up. Thus, the score obtained was divided by the sum of scale values to get the LSI for each respondent.

$$LSI_i = \frac{\Sigma\ U_{ij} * S_j}{Sum\ of\ scale\ values}$$

Where,

LSI_i = Livelihood Security Index of i^{th} respondent

U_{ij} = Unit score of the i^{th} respondent on j^{th} component

S_j = Scale value of the j^{th} component

Σ= Sum

The status of the respondent's livelihood security was calculated based on the total score of all the dimensions. The classification of respondents into the categories of the low, medium, and high livelihood security status was based on the scores obtained by the cumulative square root of Frequency (CSRF) method.

3.4.2.2 Assessment of group dynamics effectiveness index

The group dynamics among the JLG members were quantified using the Group dynamics effectiveness index (GDEI). The group dynamics effectiveness was operationalised as the total of forces among the members of the self-help group based on identified indicators. Group Dynamics Effectiveness Index was computed using the GDEI index developed by Bhatt (2009). Measurement of all the indicators was done using structured interview schedule. Adaptation of GDEI included nine indicators based on Bhatt (2009). The weightage scores were calculated using Principal component analysis using the procedure followed by Sendhil*, et.al*.2017. The indicators include Participation, Teamwork, Group atmosphere, Decision making process, Group cohesiveness, Group leadership, Interpersonal trust, Task function, and Achievement of JLGs. These indicators were rated on a five-point continuum scale that ranged from 1 to 5. Negative statements were rated in the reverse order of scores.

Table 3.4 Weightage score of indicators of GDEI

Sl. No	Indicator	Weightage score	Maximum score
1	Participation	6.67	50
2	Team work	0.59	50
3	Group atmosphere	0.79	40
4	Decision making process	0.20	40
5	Group cohesiveness	0.15	30
6	Group leadership	0.20	40
7	Interpersonal trust	0.09	30
8	Task function	0.30	45
9	Achievement of JLGs	0.01	65

To find out the overall Group Dynamics Effectiveness index following formula was used.

$$\text{Group Dynamics Effectiveness Index} = \frac{R1}{M1} \times W1 + \frac{R2}{M2} \times W2 + \ldots \frac{Rn}{Mn} \times Wn$$

Where,

$R_1, R_2 \ldots\ldots R_n$ = Score received by respondents for each indicator

$M_1, M_2 \ldots\ldots M_n$ = Maximum score one can get for each indicator

$W_1, W_2 \ldots W_n$ = Weightage score of each indicator

Based on the above formula, Group dynamics effectiveness index was worked out for all the respondents. They were classified into three groups based on the Group dynamics effectiveness index viz. low, medium, and high, with the help of CSRF method.

3.4.2.3 Factors influencing lease land farming

Delineation of the major factors influencing the lease land farming was found out by employing binary logistic regression model. The binary logit regression analyze the relationship between outcome variable of a binary nature and explanatory variables (Young and Liesman,2007).

3.4.2.4. Challenges faced by women collective farmers

Challenges faced in lease land farming as perceived by the women collective members were recorded by individually interviewing the respondents with the help of schedules specially designed for this purpose. Garrett's ranking technique was used to evaluate the challenges.

3.5 Methods used for data collection

The personal interview method was used in the primary data collection, for which a semi structured pretested interview schedule was developed based on the objectives of the study and review of the literature. Interview schedules prepared specifically for women farmers and facilitators are included in **Appendix I**. Focused group discussions and nonparticipant observations were the other methods used for data

collection in the study. The unclear responses were cleared at the same time to avoid chaos in the future. The secondary data were gathered from research articles, reports and also from government institutions.

3.6 Statistical tools used

The collected data were scored, tabulated, and analyzed using the following statistical tools and techniques.

3.6.1 Frequency and percentage

Percentage analysis was carried out to analyze the secondary as well as primary data. Frequency, as well as percentage analysis, was employed to categorize the respondents based on their profile characteristics.

3.6.2 Mean

The arithmetic mean was obtained by dividing the sum of all observations (N) by the number of observations(n). Arithmetic mean was used to find the average of different variables.

3.6.3 Standard deviation

It was explained as the square root of the arithmetic mean of the sum of the square of the deviation taken from the arithmetic mean.

3.6.5 Cumulative square root frequency

CSRF methodology was used in the categorisation of the respondents under different variables. This method allows greater efficiency for setting stratum boundaries. CSRF methodology breaks down the population into intervals, which can be of equal or unequal width.

3.6.6 Kolmogorov-Smirnov test

The K-S is non parametric test used to test the null hypothesis that a set of data comes from a normal distribution. Before proceeding to any statistical tests, the normality checking will be better in deciding the appropriateness of test.

3.6.7 Independent sample t-test

To measure the significant differences between different parameters which are normally distributed, t-test was used. The t-test is a parametric test used to test the significant difference between the means of livelihood security index and Group dynamics effectiveness index of respondent categories. It is a statistical test of significance suitable for interval or ratio data.

3.6.8 Mann Whitney U test

It is a non - parametric method used for comparing two independent samples of equal or different sample sizes. The test was employed to measure the significant difference in the perceived impact score among respondent categories.

3.6.9 Spearman coefficient of correlation(r_s)

In order to determine the relationship between the dependent and independent variables correlation was used.

3.6.10 Binomial logistic regression

The logit model was used to assess the factors affecting lease land farming. Logistic regression is the technique used to predict the relationship between predictors (our independent variables) and a predicted variable (dependent variables) where the dependent variable is binary (eg; score,nominal variables like sex).All predictor variables are tested in one block to assess their predictive ability while controlling for the effects of other predictors the model.

3.6.11 Garret ranking

The rankings of the challenges assigned by the farmers were converted into percent terms by using the following formula.

Per cent position = $100 (R_{ij} - 0.50) / N_j$

Where,

R_{ij} = Rank given for i^{th} item by j^{th} individual farmer

N_j = Number of items ranked by j^{th} individual farmer

By using the Garrett and Woodworth tables, the percent position of each rank so acquired was transformed into scores (1969). The scores of each respondent were added up for each set of challenges and divided by the total number of respondents whose scores were added. The ranking was provided as the first rank to the most significant challenge and similarly. These mean scores for all of these categories were placed in descending order.

3.6.12 Box plot

A box plot is a visual method of showing data that uses five numerical summary values: minimum, first quartile, median, third quartile, and maximum. The distance between the lowest and greatest value, including any outliers, on a boxplot represents the spread of the data.

3.6.13 Principal Component Analysis (PCA)

PCA is an effective tool in identifying the prototype of high dimension data where we cannot have luxury of graphical presentation. It facilitates in reducing the dimensions of the data after identifying the pattern without much loss of information. PCA have many alternatives uses among which one is assigning the weights while computing an index (Sendhil *et.al*.2017).

PCA requires a large sample size. It is based on the correlation matrix of the variables involved, and correlations usually need a large sample size before they stabilize. As a rule of thumb, a bare minimum of 10 observations per variable is necessary to avoid computational difficulties. (Sendhil *et.al*.2017)

In this study, PCA was used to assign weights to the indicators of group dynamics effectiveness index.

Statistical package for social sciences (version — IBM SPSS Statistics V.22) available in College of Agriculture,Vellanikkara and Microsoft Excel were used for the statistical analysis.

Results and discussion

4.RESULTS AND DISCUSSION

Keeping the objectives of the study in view, the salient results of the present research study are interpreted and discussed in the chapter under the following main heads:

4.1 Details on group characteristics, incentives, credit support received, trainings and *Nattuchantha*

4.2 Distribution of respondents according to selected socio-personal, socio-economic, socio-psychological, situational and communication variables

4.3 Analysis of impact of lease land farming on livelihood security

4.4 Assessment of livelihood security index (LSI) of respondent categories and distribution of respondents according to LSI

4.5 Distribution of respondents according to different components of LSI and comparison of the livelihood security of banana and vegetable women farmers.

4.6 Relationship between livelihood security index (LSI) and selected personal, social and psychological characteristics of the respondents

4.7 Group dynamics effectiveness of the members of women collectives

4.8 Relationship between group dynamics effectiveness and selected personal, social and psychological characteristics of the women farmers

4.9 Factors affecting lease land farming

4.10 Challenges faced by women farmers

4.11 Suggestions and policy recommendations for women collectives

4.1 Details on group characteristics, incentives, credit support received, trainings and *Nattuchantha*

The basic details of women collectives included in the study are furnished below.

Table 4.1 Details on group characteristics

Sl. No.	Block	No of members	Year of formation	Crops cultivating	Total area of cultivation ha	Crop wise area under cultivation (ha)
1	**Kodakara**	**4**	2017	Banana	0.60	0.60
2			2013	Banana, Spinach, Cowpea	0.80	Banana-0.80 others as intercrop
3			2017	Nendran,Paddy, Vegetables	0.54	Paddy -0.202 Nendran-0.34
4			2016	Nendran	1.35	1.35
5			2016	Nendran,Paddy	0.91	Paddy- 0.404, Nendran-0.505
6			2019	Nendran, Paddy, Vegetables	0.68	Paddy-0.16 , Nendran-0.52
7			2011	Nendran	0.48	0.48
8			2012	Nendran	0.60	0.60
9			2019	Nendran, Cowpea	2.22	2.22, Cowpea as intercrop
10			2013	Nendran, Cowpea	0.89	0.89, Cowpea as intercrop
11			2017	Nendran	1.12	1.12
12			2013	Nendra,Paddy	1.61	1.61
13			2016	Nendran	1.21	1.21 Cowpea as intercrop
14			2011	Nendran	2.02	2.02, Cowpea as intercrop
15			2015	Nendran, Cowpea	0.60	0.60 Cowpea as intercrop

1	**Nadathara**	**4**	2010	Bittergourd,Cowpea	0.80	Nendran-0.16 Bittergourd-0.64
2			2012	Bittergourd, Elephant foot yam	1.21	EFY-0.28 BG-0.93
3			2010	Bittergourd	0.404	BG-0.404
4			2016	Bittergourd, Elephant foot yam	0.80	EFY-0.08 BG-0.72
5			2012	Bittergourd	0.404	BG-0.404
6			2015	Bittergourd	0.121	BG-0.121
7			2016	Bittergourd	0.404	BG-0.404
8			2014	Bittergourd, Cowpea	1.21	BG-1.13, Cowpea-0.080
9			2014	Bittergourd,Cowpea	4.24	Cowpea-2.02, BG-2.22
10			2015	Bittergourd	4.65	BG-4.65
11			2016	Bittergourd	3.64	3.64
12			2010	Bittergourd	4.04	4.04
13			2015	Bittergourd, Cowpea	1.800	Cowpea-0.16, BG-1.63
14			2019	Bittergourd, Elephant foot yam	3.03	EFY-0.080 BG-2.95
15			2013	Bittergourd, Nendran	1.90	Nendran-0.404, BG-1.49

BG-Bittergourd

EFY-Elephant Foot yam

Source: *Kudumbashree*,2021

Table 4.2 Details on incentives, credit support received by women collectives (2021-22)

Financial support of women collectives from the institutional agency is detailed below.

Sl. No	Block	Area incentive (Rs.)/Year *Kudumbashree* mission	Crop and corresponding area incentive rate per ha	Crop wise area under cultivation (ha)	Credit Support (Rs.)/ Year NABARD refinanced through Nationalized Banks under MKSP Scheme: 5% interest subsidy
1	**Kodakara**	3300	**Paddy- Rs.10200/- Vegetable- Rs.12000/- Tuber -Rs.6000/- Banana- Rs. 6600/-**	0.60	3 lakhs
2		4400		Banana-0.80, others as intercrop	3 lakhs
3		1760		Paddy -0.202, Nendran-0.34	2.5 lakhs
4		7370		1.35	3 lakhs
5		2750		Paddy- 0.404, Nendran-0.505	3 lakhs
6		2860		Paddy-0.16, Nendran-0.52	2.5 lakh
7		2640		0.48	2.5 lakh
8		3300		0.60	2.5 lakh
9		12,100		2.22, Cowpea as intercrop	3 lakhs
10		4840		0.89, Cowpea as intercrop	3 lakhs
11		6094		1.12	3 lakhs
12		8800		1.61	3 lakhs
13		6600		1.21, Cowpea as intercrop	3 lakhs
14		11,000		2.02, Cowpea as intercrop	3 lakhs
15		3300		0.60, Cowpea as intercrop	3 lakhs

Sl. No	Block	Area incentive (Rs.)/Year *Kudumbashree* mission	Crop and corresponding area incentive rate per ha	Crop wise area under cultivation (ha)	Credit Support (Rs.)/ Year NABARD refinanced through Nationalized Banks under MKSP Scheme 5% interest subsidy up to 1 lakh
1	**Nadathara**	5632	**Paddy- Rs.10200/-** **Vegetable- Rs.12000/-** **Tuber -Rs.6000/-** **Banana- Rs. 6600/-**	Nendran-0.16, Bittergourd-0.64	3 lakhs
2		8096		EFY-0.28, BG-0.93	3 lakhs
3		3520		BG-0.404	1 lakh
4		6336		EFY-0.08 BG-0.72	3 lakhs
5		3520		BG-0.404	1 lakh
6		1056		BG-0.121	1 lakh
7		3520		BG-0.404	1 lakh
8		9856		BG-1.13, Cowpea-0.080	3 lakhs
9		19,360		Cowpea-2.02, BG-2.22	3 lakhs
10		40,480		BG-4.65	3 lakhs
11		31,680		3.64	3 lakhs
12		35,200		4.04	3 lakhs
13		14,256		Cowpea-0.16, BG-1.63	3 lakhs
14		25,696		EFY-0.080, BG-2.95	3 lakhs
15		13,024		Nendran-0.404, BG-1.49	3 lakhs

(Source: *Kudumbashree*,2021) BG-Bittergourd, EFY-Elephant Foot yam

Table 4.3 Training details -district wise of JLGs (2021-2022)

The trainings details of women collectives on district basis is furnished below. From the data given above, in Thrissur district 429 master farmers got trained.

No	Districts	Total No of JEVA Members	No. of JEVA Members got training	Total No of Master Farmers	No. of Master farmers got training
1	Thiruvananthapuram	18	0	225	0
2	Kollam	30	15	82	50
3	Pathanamthitta	26	22	202	202
4	Alappuzha	48	48	263	0
5	Kottayam	44	0	140	0
6	Idukki	0	20	451	210
7	Ernakulam	56	56	230	230
8	**Thrissur**	**64**	**64**	**429**	**429**
9	Palakkad	52	52	184	65
10	Malappuram	60	60	287	283
11	Kozhikode	34	52	188	92
12	Wayanad	16	42	711	680
13	Kannur	10	10	530	339
14	Kasaragod	0	0	0	0
	Total	**458**	**441**	**3922**	**2580**

Source:*Kudumbashree*,2021

Nattuchantha is weekly, monthly or festival markets conducted under the supervision of facilitators of Kudumbashree for marketing of the agricultural produce of JLGs. From the data in Table.4.4, it is indicated that 1467 number of *Nattuchanthas* are conducted in Thrissur district in the year 2021-22.

Table 4.4 *Nattuchantha* details -district wise (2021-2022)

No	Districts	No of *Nattuchantha* conducted	No of JLG Participation	Vegetable Sold (000'MT)	Paddy Sold (000'MT)	Tuber crops sold (000'MT)	Fruits Sold (000'MT)	Total sales turnover (Lakhs)
1	Tvm	526	2813	198.86	0.26	48.28	0	69.45
2	Kol	224	1191	19.50	0.05	14.74	31.73	23.35
3	Pat	1697	4131	273.58	9.63	181.43	19.74	91.78
4	Ala	980	7095	127.32	0	12.79	3.08	52.38
5	Kot	1811	1929	261.62	0	337.62	0	145.98
6	Idu	898	4171	139.37	2.49	119.04	6.44	424.20
7	Ern	854	4523	189.05	0.26	57.40	0.09	66.62
8	**Thr**	**1467**	**1804**	**201.61**	**7.04**	**117.61**	**27.52**	**160.99**
9	Pal	214	1327	1750.10	0.07	5.22	0	49.12
10	Mal	1151	8032	392.32	0	259.39	40.27	384.87
11	Koz	892	3889	134.75	4.60	37.86	3.25	79.72
12	Way	405	5259	2951.07	1.70	65.58	0.39	28.21
13	Kan	572	3551	43.24	3.00	9.52	0.85	78.77
14	Kas	346	1236	155.70	1.86	16.60	242.55	120.31
	Total	**12037**	**50951**	**234147.56**	**246.40**	**12194.08**	**3473.95**	**13939.39**

(Source: *Kudumbashree*,2021)

4.2 Distribution of respondents according to selected socio-personal, socio-economic, socio-psychological, situational and communication variables

In social science, it is essential to analyze the characteristics of farmers, which would give a basic and clear understanding about the background of the farmers. This would help in interpreting the data gathered in an effective way. The characteristics of the banana and vegetable farmers are presented in following ways.

Socio-personal variables

4.2.1 Age

Age was considered as an independent variable in this study, since it may reveal the mental maturity of an individual to take decisions for achieving his needs.

Table 4.5 Distribution of women collective members according to their age

Sl. No	Category	Banana Farmer		Vegetable farmer		Total	
		f	**%**	**f**	**%**	**f**	**%**
1	Young	18	30	17	28.33	39`	32.5
2	Middle	35	58.33	30	50	61	50.8
3	Old	7	11.67	13	21.67	20	16.7
	Total	60	100	60	100	120	100

Table 4.5 shows that 50.8 per cent of the women collective members belonged to middle age category, while 16.7 and 32.5 per cent belonged to old and young age categories respectively.

Majority of respondents belonged to middle-age, followed by young and old age. This result shows that participation of old people in women collectives was lesser compared to middle and young age categories. This might be due to the decrease in the

ability of the old age group to participate in farm activities having drudgery. The findings reiterated the results of many earlier researchers like Rashida (2020) and Binth (2018).

While a comparison was made with respect to banana and vegetable farmers, the results indicated that 58.33 percent of banana farmers came under middle, 30 percent under young and 11.67 percent under old age categories. In case of vegetable farmers, it was 50 percent (middle),28.33 percent(young) and 21.67 under old age category.

4.2.2 Educational status

Educational status of an individual reflects his or her ability to take decisions in a manner which helps in enhancing the status of life. Education moulds an individual in such a way that helps him/her to achieve his/her needs.

Table 4.6 Distribution of women collective members according to their educational status

Sl. No.	Categories	Banana Farmers		Vegetable Farmers		Women collective members	
		f	**%**	**f**	**%**	**f**	**%**
1	Functionally literate	3	5	7	11.67	10	8.33
2	Primary	4	6.67	3	5	7	5.83
3	SSLC	14	23.33	24	40	38	31.67
4	Higher secondary	17	28.33	13	21.67	30	25
5	Diploma	8	13.33	5	8.33	13	10.83
6	Degree and above	14	23.33	8	13.33	22	18.33
	Total	60	100	60	100	120	100

On the basis of education, the women collective farmers were classified into six categories, namely functionally literate, primary school, SSLC, higher secondary, diploma and degree and above. Results presented in the Table 4.6 revealed that 31.67 percent had SSLC level of education. Only 8.33 percent of the women collective farmers were functionally literate. Remaining 5.83 % had Primary education, 25 percent of them had higher secondary education, 10.83 percent possessed Diploma and 18.33 percent possessed degree and above educational qualifications. Observations of Binth (2018) seems to be relevant at this juncture.

When crop- wise analysis was considered, 28.33% percent of banana farmers had higher secondary education while only 5.00 percent were functionally literate. Remaining 6.67 percent (Primary),23.33 percent (SSLC),13.33 percent(diploma) and 23.33 percent were under degree and above categories. Information from the table also indicated that 40 percent of vegetable farmers had matriculation, while 5% of them underwent primary education. It was also revealed that 11.67 percent,21.67 percent,8.33 and 13.33 percent of vegetable farmers were under functionally literate, higher secondary, diploma and degree and above categories.

From the results we could see that the above findings again reiterated the excellent achievement of the Kerala state in adult literacy programmes.

4.2.3 Family Size & Type

It is observed that 43.3 per cent of the respondents belonged to medium family size with 4-6 members of family composition. About 35 per cent of them belonged to small family size having three members,19.17 per cent of them belonged to large family size with 7-9 members. Around 2.5 per cent of them were categorized into very large family size with more than nine members of family composition. The modern family structure in Kerala state is mainly nuclear which consists of parents and one or two children.

Table 4.7 Distribution of women collective members according to family size

Sl. No.	Categories	Banana Farmers		Vegetable Farmers		Women collective members	
		f	**%**	**f**	**%**	**f**	**%**
1	Small (Upto 3 members)	21	35.00	21	35.00	42	35
2	Medium (4-6 members)	28	46.67	24	40.00	52	43.3
3	Large (7-9 members)	9	15.00	14	23.33	23	19.17
4	Very Large (more than 9 members)	2	3.33	1	1.67	3	2.5
Total		60	100	60	100	120	100

Table 4.8 Distribution of women collective members according to family type

	Category	Banana Farmers		Vegetable Farmers		Women collective members	
		f	**%**	**f**	**%**	**f**	**%**
1	Nuclear	43	71.67	38	38	94	78.3
2	Joint	17	28.33	22	22	26	21.7
	Total	60	100	60	100	120	100

Table 4.8 clearly shows that the majority (78.3%) of the respondents belonged to nuclear family followed by joint family (21.7%).

4.2.4 Marital status

Table 4.9 reveals that majority of the women farmers (83.3 per cent) were married women while only 4.16 per cent were not married and the remaining 12.6 percent were widows.

Table 4.9 Distribution of women collective members according to marital status

Sl. No.	Category	Banana Farmers		Vegetable Farmers		Women collective members	
		f	**%**	**f**	**%**	**f**	**%**
1	Unmarried	4.00	6.67	1	1.67	5	4.16
2	Married	52.00	86.67	48	80.00	100	83.3
3	Widow	4.00	6.67	11	18.33	15	12.6
Total		60	100	60	100	120	100

4.2.5 Farming experience

As said by a proverb, “Experience is the best teacher”, farming experience is a proven factor that influences the success in agriculture.

The data revealed that 64.16 per cent of the farmwomen had medium level of farming experience followed by low (19.16) and high (16.66%).

It is also evident from Table 4.10 that majority of banana farmers (63.33%) had medium level of farming experience followed by 25 and 11.67 per cent with low and high categories respectively. Prior farming experience may improve the performance in collective farming. In case of vegetable farmers, majority (65%) were in medium category. Remaining 21.67 and 13.33 percent belonged to high and low categories respectively. The findings are in line with results of Paul (2017). From the results we could conclude that vegetable farmers are having a very rich experience in farming. This can be contributed to the fact that vegetable cultivation requires more technical base and supervision than banana cultivation.

Table 4.10 Distribution of women collective members according to farming experience

Sl. No.	Category	Banana farmers		Vegetable farmers		Women collective members	
		f	**%**	**f**	**%**	**f**	**%**
1	Low (Less than 5 years)	15	25	8	13.33	23	19.16
2	Medium (5-10 years)	38	63.33	39	65	77	64.16
3	High (Above 10 years)	7	11.67	13	21.67	20	16.66
Total		60	100	60	100	120	100

4.2.6 Occupation

Occupational status decides the extent of involvement of farmers in farm operations. Agriculture as a full-time occupation makes the farmers to allocate more time in farming.

Table 4.11 Distribution of women collective members according to their occupation

Sl. No.	Categories	Banana farmers		Vegetable farmers		Women collective members	
		f	**%**	**f**	**%**	**f**	%
1	Agriculture only	33	55.00	33	55.00	66	55
2	Agriculture and animal husbandry	5	8.33	2	3.33	7	5.83
3	Agriculture and private employee	5	8.33	1	1.67	6	5
4	Agriculture and self employed	3	5.00	6	10.00	9	7.5
5	Others (Association with MGNREGA etc)	14	23.33	18	30.00	32	26.7
Total		60		60		120	100

About 55 percent of respondents were doing agriculture only followed by other nonspecific and MGNREGA activities (26.7%). Other categories include agriculture & self-employed (7.5%), agriculture and animal husbandry (5.83%), agriculture and private employee (5%). Majority of them were depending on agriculture solely as their livelihood option.

The distribution of banana farmers showed that 55.00 per cent had their major occupation as agriculture only, followed by 23.33 per cent under non-specific and MGNREGA activities. Remaining respondents were under categories of agriculture and animal husbandry (8.33%), agriculture and private employee (8.33%), and agriculture & self-employed (5%). These farmers had been practising farming for years and started collective farming once they felt it was more efficient and effective in resource pooling. The results of Nair (2011) are in line with this finding.

Table 4.11 clearly shows that among the vegetable farmers majority (55%) were engaged in agriculture only as the main occupation followed by others (30%). The others category mainly comprises of MGNREGA works and wage labour. The remaining respondents were under agriculture and self-employed (10%), agriculture and animal husbandry (3.33%) and agriculture and private employee (1.67%) categories.

4.2.7 Social participation

Participation in formal and non-formal community organizations might have paved way to have interaction with different classes of the society which could help in widening their social network.

From the Table 4.12 it is evident that 35.84 percent of women collective farmers were coming under the medium category of social participation. Around 35 percent of respondents were in the low category while the remaining 29.17% in high category. Participation in social activities was inevitable for women farmers for performing collective farming satisfactorily. The result was on par with the results of Sabira (2016) who had also noted that women farmers, who work in association with Self Help groups, had more social participation.

Table 4.12 Distribution of women collective members according to social participation

		Banana farmers			Vegetable farmers			Total		
Sl. No.	**Category**	**Range**	**f**	**%**	**Range**	**f**	**%**	**Range**	**f**	**%**
1	Low	3-7.73	11	18.33	2-7.35	16	26.67	2-8	42	35
2	Medium	7.74-11.94	23	38.33	7.36-11.99	17	28.33	9-12.33	43	35.84
3	High	11.95-15	26	43.33	12.00-17.00	27	45.00	12.34-17	35	29.17
TOTAL			**60**			**60**			**120**	**100**

While examining crop wise data, 43.33 percent is in high, 38.33 percent in medium and 18.33 percent of banana farmers were under low category of social participation. Around 45 percent is in high, 28.33 percent in medium, 26.67 percent of vegetable farmers were coming under low category of social participation. From the data we can conclude that vegetable farmers are showing more participation in social organizations.

4.2.8 Training received

Table 4.13 Distribution of women collective members according to the training received

Sl. No.	**Categories**	**Banana farmers**		**Vegetable farmers**		**Women collective members**	
		f	**%**	**f**	**%**	**f**	**%**
1	No training attended	10	16.67	15	25	25	**21**
2	Attended Trainings	50	83.33	45	75	95	79

Table 4.13 shows that majority (79%) of respondents attended trainings and the remaining 21 percent did not attend trainings. This is reinforcing the fact that *Kudumbashree mission* is providing frequent training sessions to its beneficiaries. The results are in line with that of previous researchers like Rashida (2020).

A perusal of Table 4.14 revealed that majority of the respondent (59.17%) were of the opinion that the training programme was very useful for acquiring benefit from group interactions during training. While 71.7 percent were of the opinion that trainings was not useful for the extent of fulfilment of needs. This is pointing towards the necessity of need-based training programmes.

The results from the Table 4.15 reveals about the rating given by respondents for the trainings they received. More than 20 percent of respondents were under the medium category of training usefulness or utility. While remaining 39.17 and 38.33 percent were under high and low categories respectively. This is emphasizing the usefulness of trainings that beneficiaries are receiving from the supporting agencies.

Table 4.14 Rating of farm women training programmes

Sl.No	Dimensions	Rating Given to utility of training programmes			
		Useful		Not Useful	
		f	%	f	%
1	Usefulness in technical knowledge and skill gain	70	58.3	50	41.7
2	Extent of fulfilment of needs	34	28.3	86	71.7
3	Benefit from group interactions during training	71	59.17	49	40.8
4	Usefulness of training experience in daily life	48	40	72	60
5	Usefulness in getting credit support from organizations	66	55	54	45
	Total	**120**	**100**	**120**	**100**

Table 4.15 Distribution of women farmers according to utility of trainings

Sl. No.	Category	Banana farmers			Vegetable farmers			Women collective members		
		Range	f	%	Range	f	%	Range	f	%
1	Low	0-1.085	26	43.33	0-1.601	20	33.33	0-1.32	46	**38.33**
2	Medium	1.086-3.996	6	10	1.602-3.689	21	35	1.33-3.85	27	**22.5**
3	High	3.997-5	28	46.67	3.69-5	19	31.67	3.86-5	47	**39.17**
Total			**60**	**100**		**60**	**100**		**120**	**100**
Mean and S. D =2.41, 1.96										

4.2.9 Status of digital literacy among farm women

Digital literacy is expressed as the ability to find, evaluate, use, share and create content using information technologies and the internet (Pilgrim and Martinez, 2013). Digital literacy is one of the crucial factors that moulds farm women to newer perspectives of their life. One of the major objectives of our government is to bridge the digital gap existing among rural women through several initiatives. Digitally literate persons are able to operate computers/ digital access devices (like tablets, smartphones, etc.), send and receive emails, browse the internet, access Government services, search for information, undertake cashless transactions, etc. and hence use IT to actively participate in the process of nation-building.

4.2.9.1 Possession of digital gadgets

Table 4.16 Distribution of women farmers according to possession of digital gadgets

Sl. No.	Category	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Keypad phone	14	23.33	19	31.67	33	**27.5**
2	Smartphone	42	70	41	68.33	83	**69.17**
3	Computer	4	6.67	0	0	4	**3.33**
Total		**60**	**100**	**60**	**100**	**120**	**100**

It was encouraging to note that the ownership of smart phones was quite high among the respondents accounting 69.17 percent. Remaining 27.5 percent possessed keypad phones and only 3.33 percent had computers.

The data revealed that the ownership of mobile phones was quite high among the respondents as 70.00 percent of banana farmers had smart phones for their personal use. Out of them, 23.33 percent had a keypad phone. Only 6.67 percent of banana farmers were in possession of computer. While we analyse the case of vegetable farmers, majority of them (68.33%) had smartphone while remaining 31.67 percent were using keypad phone. No vegetable farmers were in possession of computers. Possession of digital gadgets indirectly points out that the financial status of banana farmers is better than vegetable farmers.

4.2.9.2 Access to internet connectivity

Table 4.17 Distribution of women farmers according to access to internet connectivity

Sl. No.	Category	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Have internet connectivity	46	76.67	38	63.33	84	**70**
2	Do not have internet connectivity	14	23.33	22	36.67	36	**30**
Total		**60**	**100**	**60**	**100**	**120**	**100**

Only 70 percent of respondents had internet connectivity while remaining 30 percent were not having the connectivity. Majority, 76.67 percent of banana farmers were having internet connectivity. In case of vegetable farmers, 63.33 percent had internet connectivity while 36.67 percent doesn't have internet connectivity. This is in line with the findings of Agarwal (2017)**.** The data is also pointing towards the need for digital inclusion in rural areas.

4.2.9.3 Internet speed

Table 4.18 Distribution of women farmers according to internet speed

Sl. No.	Category	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Poor	24	40.00	16	26.67	40	**33.33**
2	Moderate	22	36.67	34	56.67	56	**46.67**
3	Good	14	23.33	10	16.67	24	**20**
Total		**60**	**100**	**60**	**100**	**120**	**100**

Around 46.67 percent of respondents were of the opinion that they were experiencing moderate level of internet speed. Remaining 33.33 percent had poor internet speed. Only 20 percent of respondents were experiencing good internet speed. This is in line with the findings of Agarwal 2017.The data is also pointing towards the need for providing good internet connectivity.

4.2.9.4 Technical help on usage of digital devices

Table 4.19 Distribution of women farmers according to technical help on usage of digital devices

Sl. No.	Category	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Independently	43	71.67	31	51.67	74	**61.67**
2	With the help of family and friends	17	28.33	29	48.33	46	**38.33**
Total		**60**	**100**	**60**	**100**	**120**	**100**

Majority (61.67 %) of women farmers were of the opinion that they were not seeking technical help from others for usage of devices. While remaining 38.33 percent were seeking help from family and friends. Majority of banana (71.67 %) and vegetable (51.67 %) women farmers were of the opinion that they were not seeking technical help from others for using devices. This is an indication that women farmers are more interested to learn the use of digital devices independently.

4.2.9.5 Frequency of usage of apps

A perusal of the data indicates that 70 percent of women farmers used facebook frequently while 40.83 percent used whatsapp occasionally. Whereas 79.17 percent never used digital payment apps. This is an indication of poor digital financial inclusion among rural women. Although *Kudumbashree* has taken initiative for opening bank account for its beneficiaries, still the financial literacy is not much improved among rural women. Also, majority of respondents (77.5%) did not even install online shopping apps.

Table 4.20 Distribution of women farmers according to frequency of use of apps

Frequency of use	**Frequently**		**Occasionally**		**Never**	
Applications	**f**	**%**	**f**	**%**	**f**	**%**
Facebook	84	70	3	2.5	33	27.5
Whatsapp	38	31.67	49	40.83	33	27.5
Youtube	42	35	45	37.5	33	27.5
Digital payment apps	13	10.83	12	10	95	79.17
Online shopping apps	13	10.83	14	11.67	93	77.5
	120	**100**	**120**	**100**	**120**	**100**

Table 4.21 Distribution of women farmers according to frequency of use of apps (Crop wise)

	Facebook (%)		Whatsapp (%)		Youtube (%)		Digital payment apps (%)		Online shopping apps (%)	
	B	V	B	V	B	V	B	V	B	V
Frequently	23.33	31.67	23.33	31.67	23.33	31.67	66.67	91.67	58.33	96.67
Occasionally	3.33	1.67	45.00	36.67	38.33	36.67	15.00	5.00	23.33	0.00
Never	73.33	66.67	31.67	31.67	38.33	31.67	18.33	3.33	18.33	3.33

B- Banana farmers, V-Vegetable farmers

Table 4.21 shows that 18.33 percent of banana and 3.33 percent of vegetable women farmers never used online shopping apps.While 23.33 percent of banana and 31.67 percent of vegetable farmers frequently used whatsapp.

Socio-Economic variables

4.2.10 Annual Income

Annual income decides the farmers status in a social system. In this study annual income refers to the income of the farmers household.

Table 4.22 Distribution of women collective members according to their annual income

Sl. No.	Category	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Low (Upto Rs.50,000)	21	35	30	50	59	**49.2**
2	Medium (Rs.50,001-5 Lakhs)	29	48.33	24	40	45	**37.5**
3	High (Above 5 Lakhs)	10	16.67	6	10	16	**13.3**
Total		**60**	**100**	**60**	**100**	**120**	**100**

Majority (49.2%) were under low-income category which shows that because of the low income of their family, they might have moved towards JLG group farming for getting an additional income. They were able to support their family through their earnings. Remaining 37.5 percent comes under medium category followed by 13.3 percent in high income category.

Regarding banana farmers, 48.33% belonged to medium category followed by low (35%) and high (16.67%) income categories. A glance at Table 4.22 also showed that annual income of majority (40%) of vegetable farmers belonged to medium category followed by high (10%) and low (50%) income categories. While comparing banana and vegetable farmers, 35 percent of banana farmers were in low category while it is 50 percent for vegetable farmers pointing towards the better financial status of banana farmers.

4.2.11 BPL/APL categories

From the Table 4.23 we could infer that that majority (65%) of the respondents were in BPL category while remaining 35 percent in APL category. In case of vegetable farmers (76.67%) belonged to BPL category while only 53.33 percent of banana farmers belonged to BPL category.

Table 4.23 Distribution of women collective members according to BPL category

Sl. No	Categories	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	BPL Category	32	53.33	46	76.67	78	**65**
2	APL Category	28	46.67	14	23.33	42	35

4.2.12 Size of landholding

It was observed that 72.5 percent of respondents had marginal landholding, 24.2 percent had small landholdings, remaining 3.33 percent possessed semi medium. This is an

indication of motivation of respondents to engage in collective farming since the women farmers were facing land constraints.

From the Table 4.24 it can be seen that majority of the banana farmers (65%) belonged to marginal category. Only 35 percent were having land area more than 2.5 acres. It is interesting to note that no banana farmers were in possession of land area more than 5 acres. Whereas vegetable farmers accounting 6.67 % were having land area more than 5 acres .80 percent were under the marginal category and only 13.33 percent were coming under small farmer category.

Table 4.24 Distribution of women collective members according to size of landholding

Sl. No.	Categories	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Marginal (Less than 2.5 acres)	39	65	48	80	87	**72.5**
2	Small (2.5 -5 acres)	21	35	8	13.33	29	**24.2**
3	Semi Medium (5 -10 acres)	0	0	4	6.67	4	**3.33**
4	Medium (10- 25 acres)	0	0	0	0	0	**0**
5	Large (Above 25 acres)	0	0	0	0	0	**0**
Total		**60**	**100**	**60**	**100**	**120**	**100**

4.2.13 Land ownership Status

Table 4.25 Distribution of women collective members according to land ownership status

Sl. No.	Categories	Banana farmers		Vegetable farmers		Women collective members	
		f	%	f	%	f	%
1	Land entitled by Women Farmer	6	10	9	15	15	**12.5**
2	Land entitled by spouse	51	85	47	78.33	98	**81.7**
3	***Purambokku* (Untitled land)**	**3**	**5**	**4**	**6.67**	**7**	**5.8**

When we analyse the percentage of women collective farmers owning land in their name, only 12.5 percent was included in this category. While majority (81.7%) were having land in their spouse's name. Also, 5.8 percent farmers were staying in *Purambokku* land. Gender inequalities exist in land ownership. Simply stated, more men than women own land (Deere *et.al*.2012). This fact is evident from the above results also. Only 6% of banana farmers have their name on the title deed. While in case of vegetable farmer's it is 15 percent. The above result highlights the need of land literacy among women farmers. Legal literacy campaigns will enhance the awareness among women farmers.

4.2.14 Socio-psychological variables

Table 4.26 Distribution of women collective members according to socio-psychological variables

Sl. No.	Variables	Categories	Women collective members						Mean	S. D
			Range	Banana farmers	Range	Vegetable farmers	Range	Total		
1	Market orientation	Low	12-22.96	8 (13.33)	7-22.82	10 (16.67)	7-22.32	18 (15)	26.5	4.70
		Medium	22.97-27.05	18 (30)	22.83-28.79	33 (55)	22.33-27.8	46 (38.33)		
		High	27.06-32	34 (56.67)	28.8-32	17 (28.33)	27.9-32	56 (46.67)		
2	Economic motivation	Low	5-18.2	12 (20)	9-17.77	15 (25)	5-17.65	22 (18.33)	19.5	3.13
		Medium	18.21-20.83	18 (30)	17.78-20.68	24 (40)	17.66-20.61	47 (39.17)		
		High	20.84-24	30 (50)	20.69-24	21 (35)	20.62-24	51 (42.5)		
3	Risk orientation	Low	5-12.34	13 (21.67)	5-14.23	12 (20)	5-13.49	32 (26.67)	17.22	5.05
		Medium	12.35-19.63	21 (35)	14.24-19.71	20 (33.33)	13.5-19.62	34 (28.33)		
		High	19.64-24	24 (26)	19.72-24	28 (46.67)	19.63-24	54(45)		
4	Achievement orientation	Low	5-14.61	13 (21.67)	19-17.19	7 (11.67)	5-15.62	20 (16.67)	18.44	3.62
		Medium	14.62-19.88	25 (41.67)	17.2-20.54	33 (55)	15.63-20.03	66 (55)		
		High	19.89-23	22 (36.67)	20.55-25	20 (33.33)	20.04-25	34 (28.33)		

5	**Innovativeness**	**Low**	11-12.85	12 (20)	10-13.42	19 (31.67)	10-13.02	44 (36.67)	**13.65**	**1.08**
		Medium	12.86-14.17	37 (61.67)	13.43-14.26	22 (36.67)	13.03-13.93	25 (20.83)		
		High	14.18-15	11 (18.33)	14.27-15	19 (31.67)	13.94-15	51 (42.5)		
6	**Credit orientation**	**Low**	3-3.97	11 (18.33)	2-3.76	12 (20)	2-3.96	23 (19.17)	**4.22**	**0.82**
		Medium	3.98-4.84	24 (40)	3.77-4.68	20 (33.33)	3.97-4.8	44 (36.67)		
		High	4.85-5	25 (41.67)	4.69-5	28 (46.67)	4.9-5	53 (44.17)		
7	**Scientific orientation**	**Low**	13-16.5	23 (38.33)	14-18	20 (33.33)	13-17.17	34 (28.33)	**18.85**	**2.68**
		Medium	16.51-19.67	15 (25)	18.01-20.86	18 (30)	17.18-20.41	51 (42.5)		
		High	19.68-23	22 (36.67)	20.87-24	22 (36.67)	20.42-24	35 (29.17)		
8	**Environmental orientation**	**Low**	5-9.02	20 (33.33)	6-8.72	10 (16.67)	5-9.11	39 (32.5)	**9.85**	**1.85**
		Medium	9.03-10.88	15 (25)	8.73-10.59	19 (31.67)	9.12-11.12	66 (55)		
		High	10.89-13	25 (41.67)	10.6-13	31 (51.67)	11.13-13	15 (12.5)		
9	**Attitude toward collective farming**	**Low**	10-11.95	8 (13.33)	9-13.99	19 (31.67)	9-12.25	39 (32.5)	**12.99**	**2.24**
		Medium	11.96-13.68	32 (53.33)	14-16.25	35 (58.33)	12.26-13.41	42 (35)		
		High	**13.69-15**	**20 (33.33)**	**16.26-32**	**6 (10)**	**13.42-15**	**39 (32.5)**		

Percentage in Parenthesis

A perusal of data indicates that majority (46.67%) of farmwomen comes under high level of market orientation while 38.33 per cent of the farmwomen had medium level of market orientation followed by 15 per cent having low market orientation respectively.

Majority (42.5%) of farmwomen comes under high level of economic motivation followed by medium (39.17%) and low level(18.33%) of economic motivation. These high levels of economic and market orientation might have prompted farmwomen to desire for better livelihood option thus to take part in collective farming.

Majority (45%) of farmwomen comes under high level of risk orientation. It was observed that 28.33 per cent of the women farmers had medium level risk orientation followed by 26.67% with low level.

It was observed that 55 percent of farmwomen had medium level of achievement motivation followed by 28.33 per cent with high level and 16.67 per cent with low level.

Majority (42.5%) of the farmwomen had high level of innovativeness followed by 36.67 per cent and 20.83 per cent were under low level and medium level respectively. This is supported by the various ongoing agripreneurship activities of women farmers.

The data depicted that 44.17 per cent of the farmwomen had high level of credit orientation followed by low (19.17%) and medium levels (36.67%) of credit orientation.

The data showed that 42.5 per cent of the women farmers were under medium scientific orientation category followed by 29.17 and 28.33 per cent belonged to high and low categories respectively.

A perusal of the data revealed that 55 per cent of the farmwomen had medium level of environmental orientation followed by 32.5 and 12.5 per cent having low and high level of environmental orientation respectively. This is supported by the fact that majority of them were consuming what they produce and eventually leading to judicious application of plant protection chemicals.

The data depicted that 35 per cent of the farmwomen had medium level of favourable attitude towards collective faming followed by 32.5 percent in low and high

level of favourable attitude towards collective farming. Only individuals with a favourable attitude towards collective farming can sustain and excel in it.

4.2.15 Communication variables

Table 4.27 Distribution of women collective members according to extension agency contact

Variable	Categories	Banana farmers		Vegetable farmers		Total	
Extension agency contact		**Range**	**f (%)**	**Range**	**f (%)**	**Range**	**f (%)**
	Low	1-3.42	16 (26.67)	1-2.79	11 (18.33)	1-2.95	**17 (14.17)**
	Medium	3.43-4.76	17 (28.33)	2.8-4.71	27 (45)	2.96-4.86	**54 (45)**
	High	4.77-7	27 (45)	4.72-6	22 (36.67)	4.87-7	**49 (40.83)**
Mean and S. D				**3.97**	**1.27**		

Percentage in Parenthesis

Table 4.28 Distribution of women collective members according to mass media exposure

Variable	Categories	Banana farmers		Vegetable farmers		Total	
Mass Media Exposure		**Range**	**F (%)**	**Range**	**F (%)**	**Range**	**F (%)**
	Low	1-4.73	13 (21.67)	2-4.44	13 (21.67)	1-5.07	45 (37.5
	Medium	4.74-6.79	21 (35)	4.45-6.25	26 (43.33)	5.08-6.94	33 (27.5)
	High	6.8-9	26 (43.33)	6.26-9	21 (35)	6.95-9	42 (35)
Mean and S. D		**5.76**		**1.56**			

Percentage in Parenthesis

From the Table 4.27 it can be seen that 45 percent of farm women had medium contact with the extension agencies while 40.83 per cent had high and 14.17 per cent had low contact for seeking agricultural related information.

Table 4.27 also showed that among banana farmers 45 per cent had high, 28.33 per cent had medium and 26.67 per cent had low contact with extension agencies. Agricultural officer was the most frequently contacted extension agent followed by master farmer and JEVA by the respondents. The results go in line with the findings presented by Sarkar (2019). With the above results it can be concluded that banana farmers were having more extension agency contact.

Around 37.5 percent of respondents had low mass media exposure and rest 35 percent had high exposure followed by 27.5 percent in medium category. Less availability of time due to domestic workload of women in family chores is a actor affecting mass media exposure.

A perusal of data given in Table 4.28 also indicates that 43.33 percent of vegetable farmers had medium mass media exposure, while 35 per cent had high and 21.67 percent had low level of mass media exposure. The Table 4.28 also indicates that that 43.33 percent of banana farmers had medium mass media exposure, while 35 per cent had high and 21.67 percent had low and level of mass media exposure.

Situational Variables

Lease land area characteristics

4.2.16 Size of leased in land

Table 4.29 Distribution of women collective members according to size of leased in land

Sl. No.	Categories	Women collective members		
		Banana farmers	**Vegetable farmers**	**Total**
1	Marginal (Less than 2.5 acres)	44(73.33)	15(25)	**59(49.17)**
2	Small (2.5 -5 acres)	9(15)	11(18.33)	**20(16.67)**
3	Semi Medium (5-10 acres)	7(11.67)	20(33.33)	**27(22.50)**
4	Medium (10- 25 acres)	0	10(16.67)	**10(8.33)**
5	Large (Above 25 acres)	0	4(6.67)	**4(3.33)**
Total		**60**	**60**	**120**

Percentage in Parenthesis

The major findings from situational variables are briefed as follows. Majority (49.17%) of respondents were doing lease land cultivation in marginal land, followed by 22.5 percent in semi medium, ,16.67 percent in small, 8.33 percent in medium and only 3.33 percent in large. This trend in area under lease land cultivation is highlighting the land crisis faced by Kerala for agricultural purposes.

From the Table 4.29, it can be inferred that majority of the banana farmers (73.33%) belonged to marginal category of leased in land. Only 15 percent belonged to small category, Remaining 11.67 percent were in semi medium category. None of the banana farmers were included in the other categories. In case of vegetable farmers, 33.33 percent were under semi medium category followed by 25 percent in

marginal,18.33 percent in small,6.67 percent in large categories. Here the results show that more area of leased land is cultivated by vegetable farmers compared to banana farmers.

4.2.17 Mode of rent payment of leased in land

Table 4.30 Distribution of women collective members according to mode of rent payment

Sl. No.	Categories	Women collective members		
		Banana farmers	Vegetable farmers	Total
1	Cash	34(56.67)	38(63.33)	**72(60)**
2	Both Cash and Kind Payment	26(43.33)	22(36.67)	**48(40)**
Total		**60**	**60**	**120**

Percentage in Parenthesis

A perusal of the Table 4.30 indicates that the majority (60%) of farmers from women collectives were paying their rent as cash only while the remaining 40 percent were paying the rent as both cash and kind. In the case of banana farmers, 56.67 percent were paying as cash while the remaining 43.33 percent were paying as cash and kind. Regarding vegetable farmers similar trend was observed where payment was 63.33 percent as cash and 36.67 as both cash and kind. Cash payment was more preferred due to consumption of farm produce by the respondents. Actually the women farmers were giving minimal quantity of produce as kind payment.

4.2.18 Status of soil testing of leased in land

Table 4.31 Distribution of women collective members according to status of soil testing of leased in land

Sl. No.	Categories	Women collective members		
		Banana farmers	Vegetable farmers	Total
1	Conducted Soil test of Leased land	41(68.33)	35(58.33)	**44(36.67)**
2	Not Conducted Soil Test	19(31.67)	25(41.67)	**76(63.33)**
Total		**60**	**60**	**120**

Percentage in Parenthesis

Table 4.31 indicates that majority (63.33%) of women collective farmers had not conducted soil testing of their leased in land and 36.67 per cent conducted soil test. Since the land is not owned, women farmers were not motivated to do soil testing. Even landowners were not willing to do soil test.

4.2.19 Status of leased in land before collective farming

Table 4.32 Distribution of women collective members according to the status of leased in land before collective farming

Sl. No.	Categories	Women collective members		
		Banana farmers	Vegetable farmers	Total
1	Fallow land before collective farming	15(25)	41(68.33)	56(46.67)
2	Cultivable land before collective farming	45(75)	19(31.67)	64(53.33)
Total		**60**	**60**	**120**

Percentage in Parenthesis

A perusal of the Table 4.32 indicates that the majority (53.33%) of women farmers were cultivating in the already cultivable lands while 46.67 percent of women farmers had converted the fallow land to cultivable land.

In the case of banana farmers, majority (75%) had taken leased land which was cultivable land earlier while only 25 percent taken fallow land for leasing purpose. In the case of vegetable farmers, reverse trend was observed where majority (68.33%) had taken fallow land and 31.67 percent had taken cultivable land for leasing. Vegetable farmers were more interested in converting fallow land as compared to banana farmers attributing to large continuous tract of land needed for erecting *pandals* for crops like bitter gourd.

4.2.20 Rent amount paid by the lessee

Table 4.33 Distribution of women collective members according to the rent amount paid by the lessee

Sl. No.	Categories	Women collective members		
		Banana farmers	Vegetable farmers	Total
1	Below 25,000	17(28.33)	11(18.33)	**28(23.33)**
2	25,000- 50,000	32(53.33)	15(25)	**47(39.17)**
3	Above 50,000	11(18.33)	34(56.67)	**45(37.5)**
Total		**60**	**60**	**120**

Percentage in Parenthesis

Table 4.33 indicates that 39.17 percent of women collectives had paid rent ranging Rs.25,000 to 50,000 per acre. While the remaining 37.5 percent had paid greater than Rs. 50,000 and 23.33 percent paid less than Rs.25,000.

4.2.21 Leasing history

Table 4.34 Distribution of women collective members according to leasing history

Sl. No.	Categories	Women collective members		
		Banana farmers	**Vegetable farmers**	**Total**
1	Leased in from the same person for more than 3 years	31(51.67)	23(38.33)	**54(45)**
2	Leased in from Different person for more than 3 years	29(48.33)	37(61.67)	**66(55)**
Total		**60**	**60**	**120**

Percentage in Parenthesis

Table 4.34 indicates that 55 percent of respondents had a leasing history of different lessors while remaining 45 percent with same person. This can be due to the fact that although there is agreement for three years, still landowners are of the fear that lessee will not vacate their land after agreement period.

Socio-personal

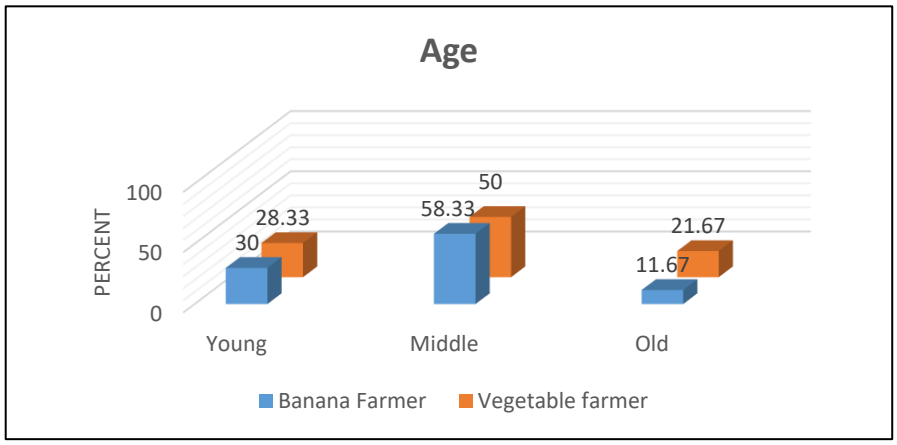

Fig. 3 Distribution based on age

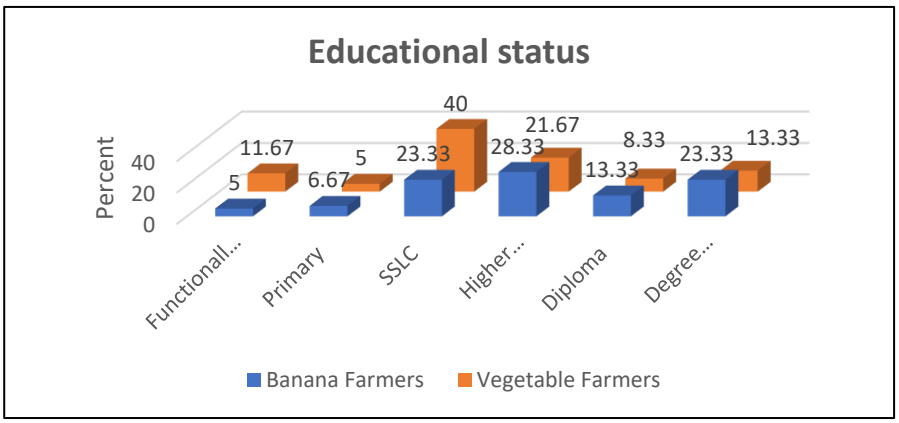

Fig. 4 Distribution based on education

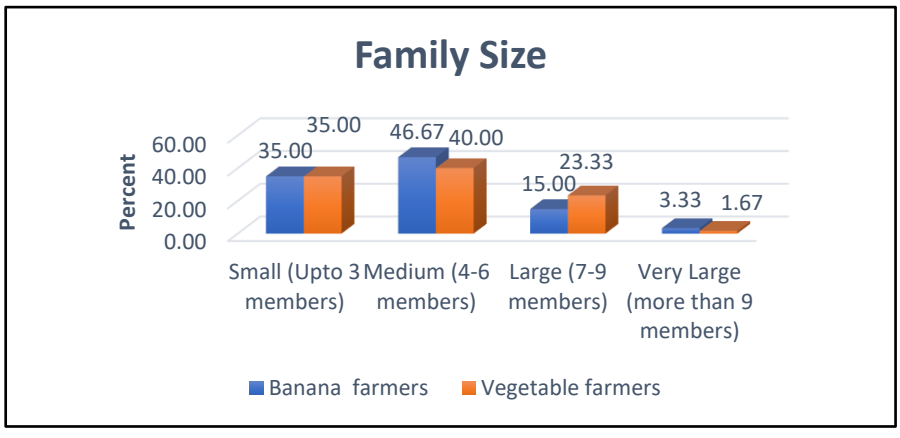

Fig. 5 Distribution based on family size

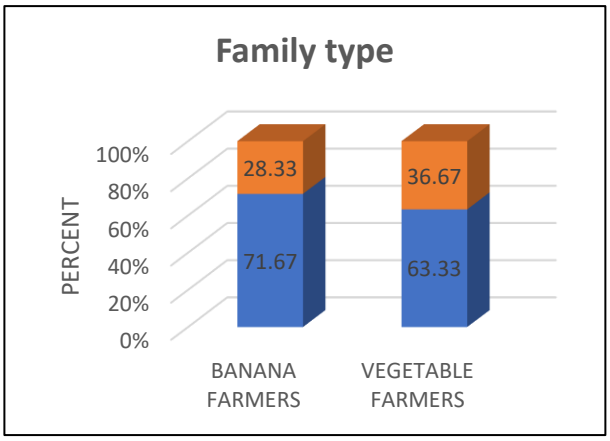

Fig. 6 Distribution based on family type

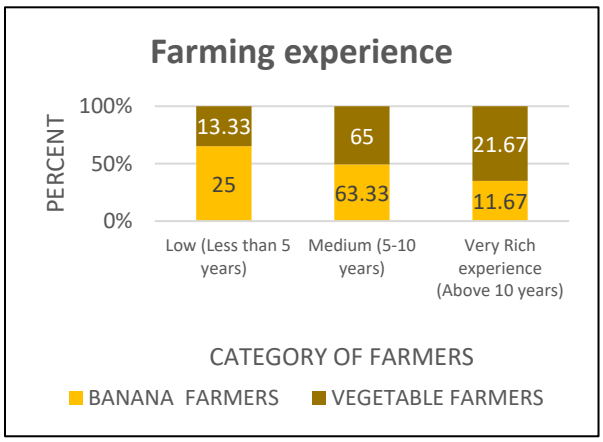

Fig. 7 Distribution based on farming experience

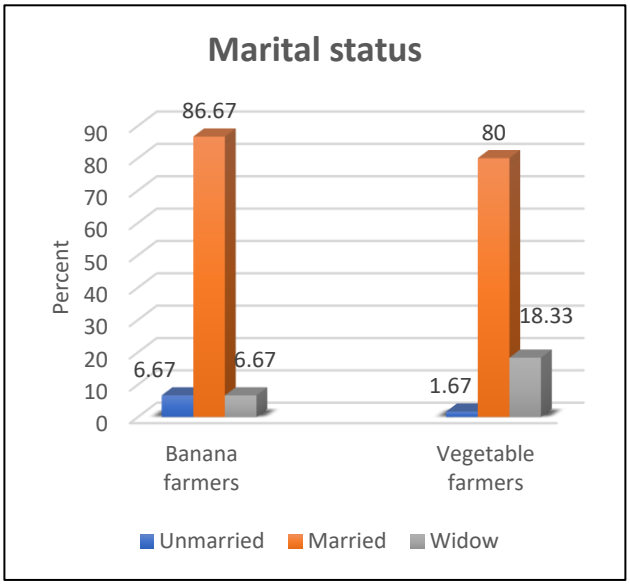

Fig. 8 Distribution based on marital status

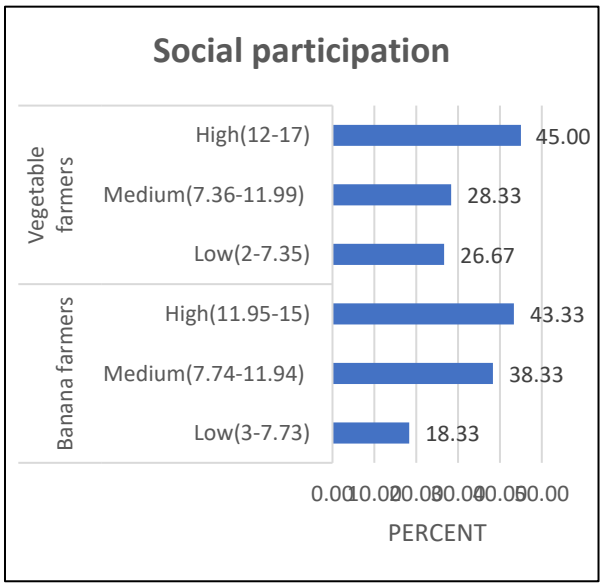

Fig. 9 Distribution based on social participation

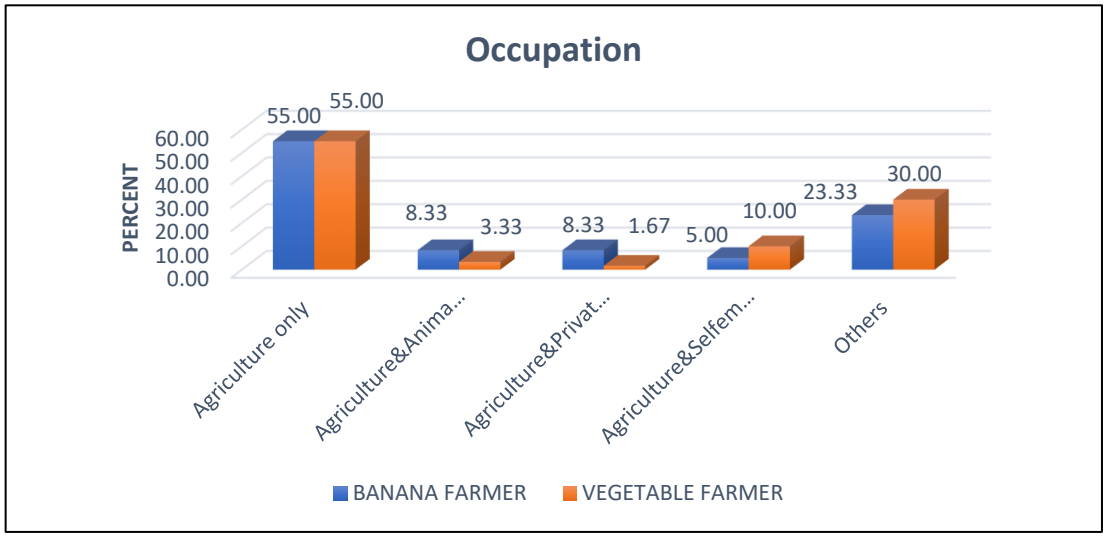

Fig. 10 Distribution based on occupation

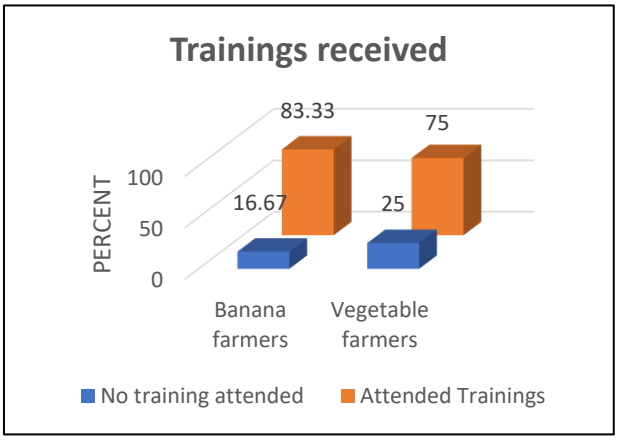

Fig. 11 Distribution based on trainings received

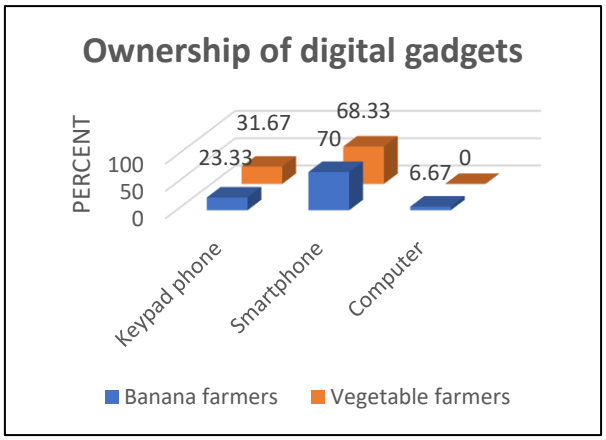

Fig. 12 Distribution based on possession of digital gadgets

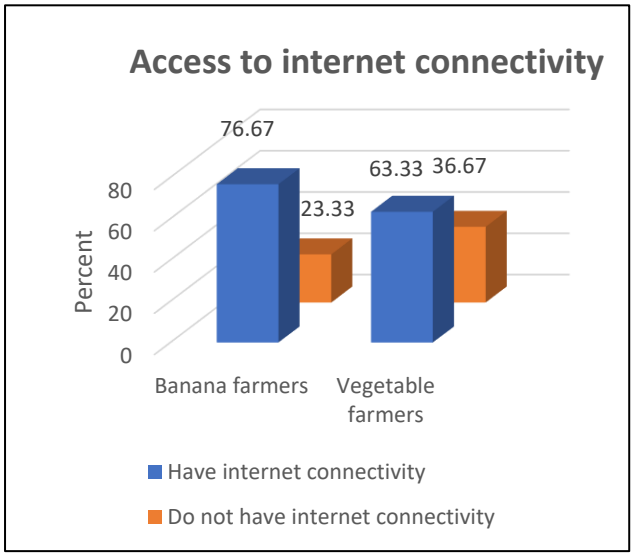

Fig. 13 Distribution based on internet connectivity

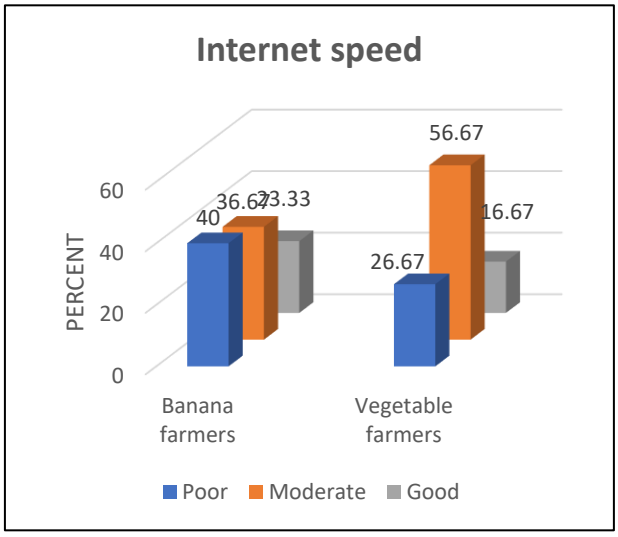

Fig. 14 Distribution based on internet speed

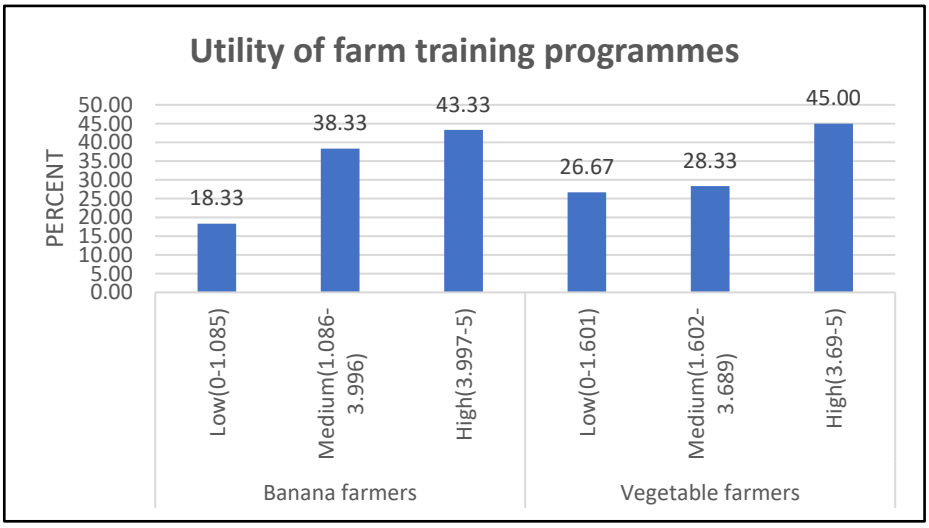

Fig. 15 Distribution of respondents based on utility of farm trainings

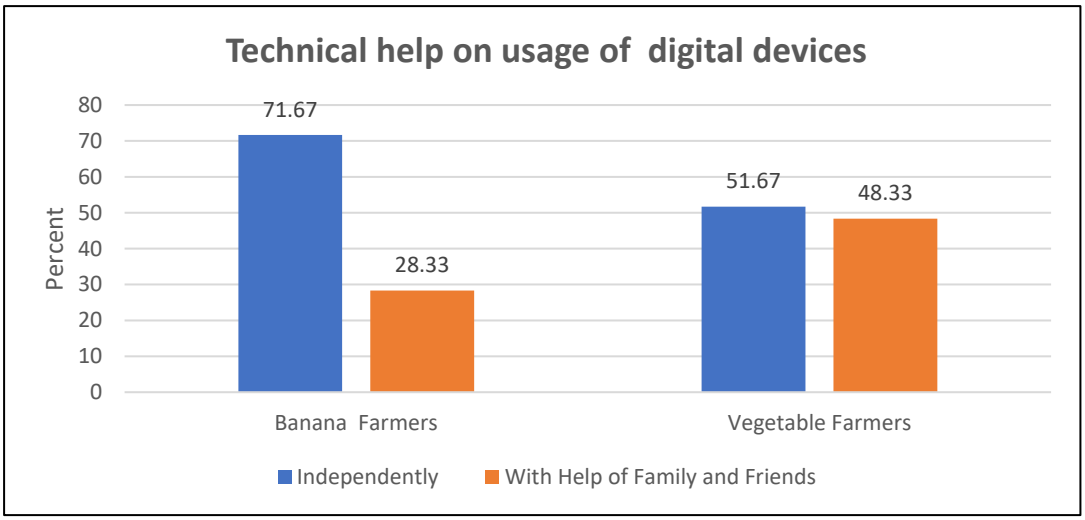

Fig. 16 Distribution based on usage of digital devices

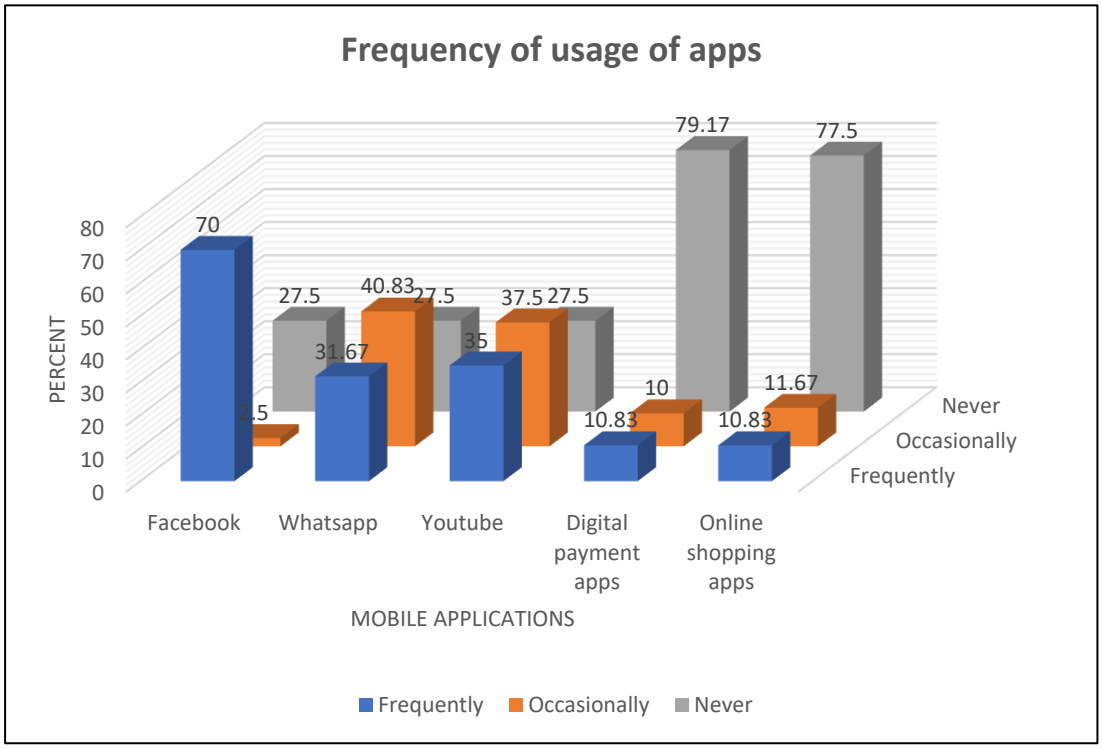

Fig. 17 Distribution based on frequency of usage of apps

Socio-economic variables

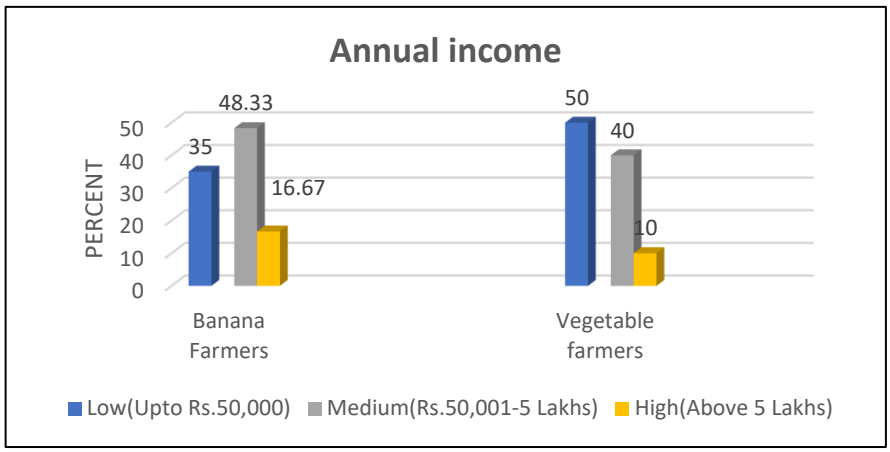

Fig. 18 Distribution based on annual income

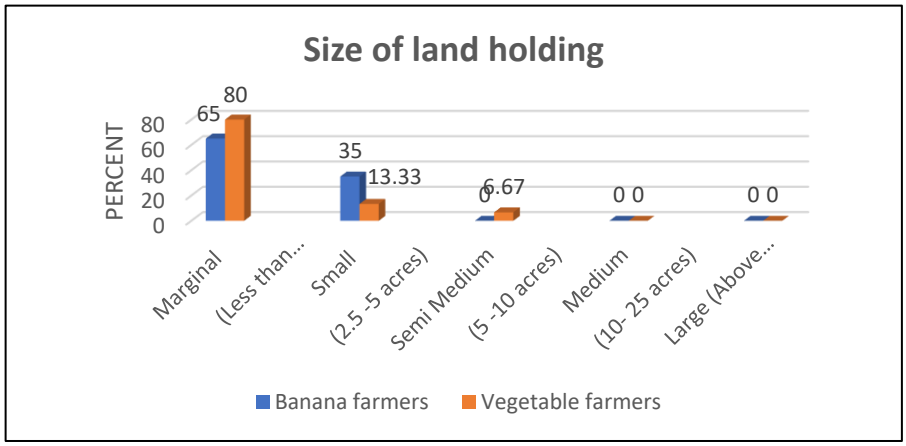

Fig. 19 Distribution based on size of land holding

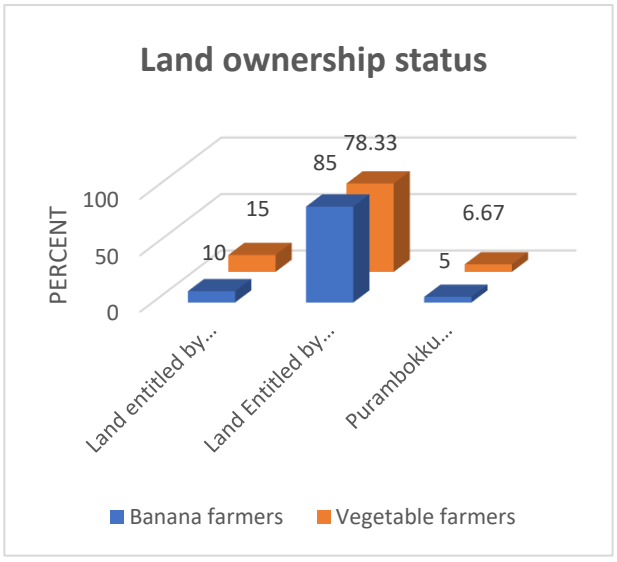

Fig. 20 Distribution based on land ownership

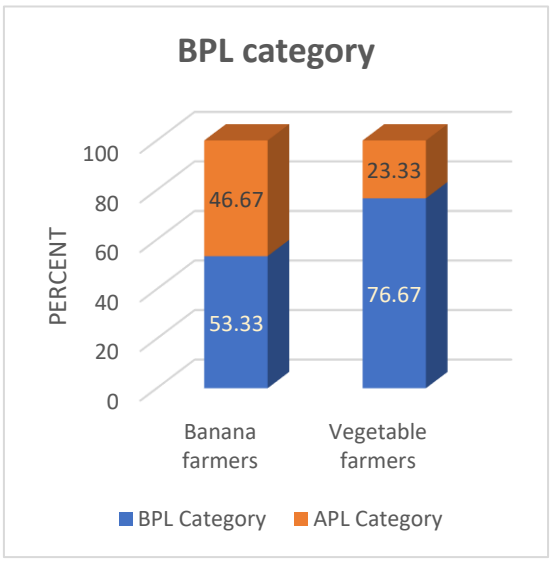

Fig. 21 Distribution based on BPL category

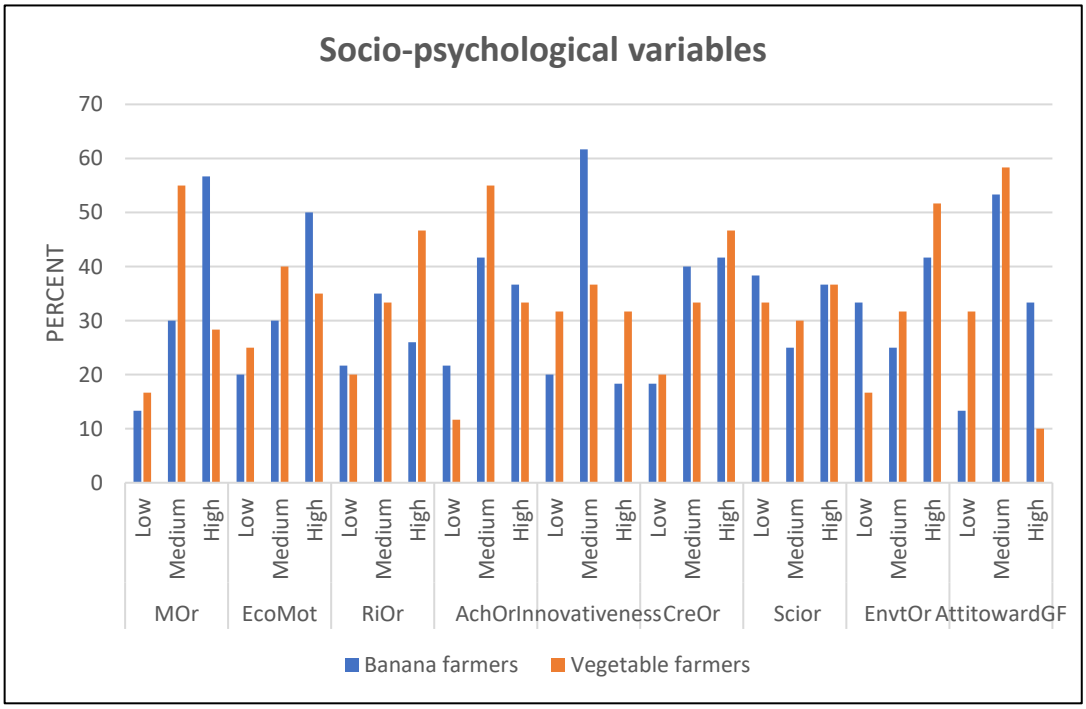

Fig. 22 Distribution based on socio -psychological variables

Communication variables

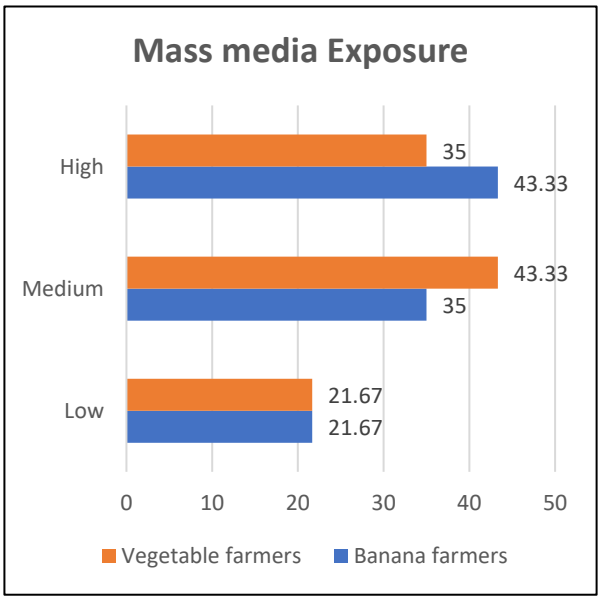

Fig. 23 Distribution based on Mass media exposure

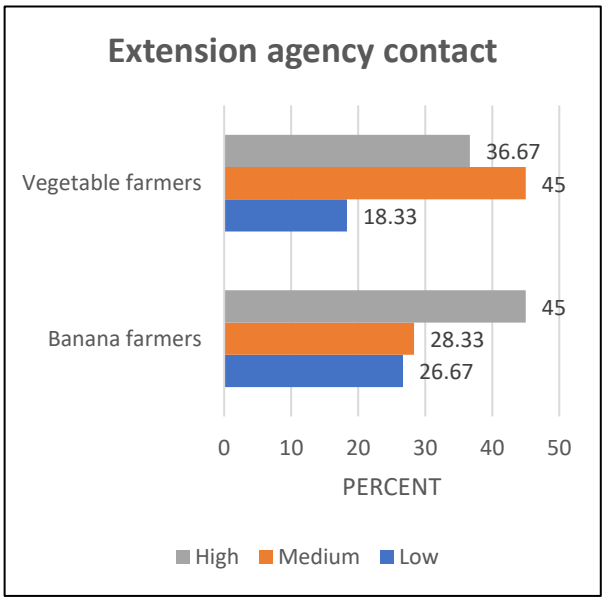

Fig. 24 Distribution based on Extension agency contact

Situational variables

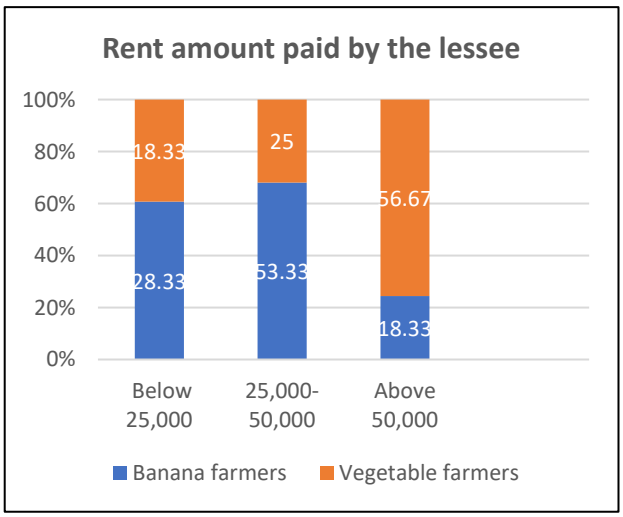

Fig. 25 Distribution based on rent amount

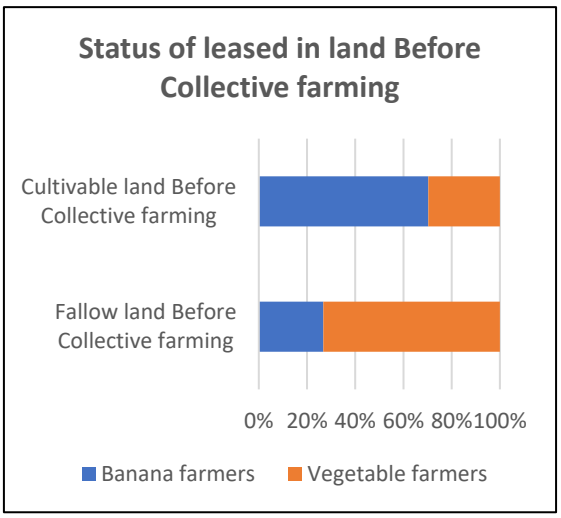

Fig. 26 Distribution based on status of leased land

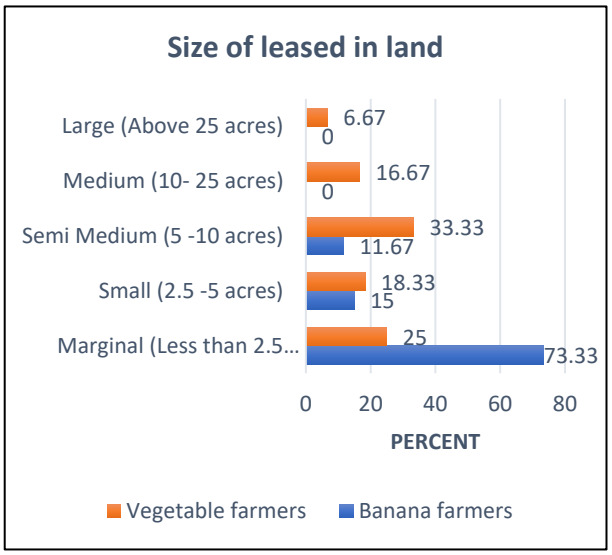

Fig. 26 Distribution based on size of leased in land

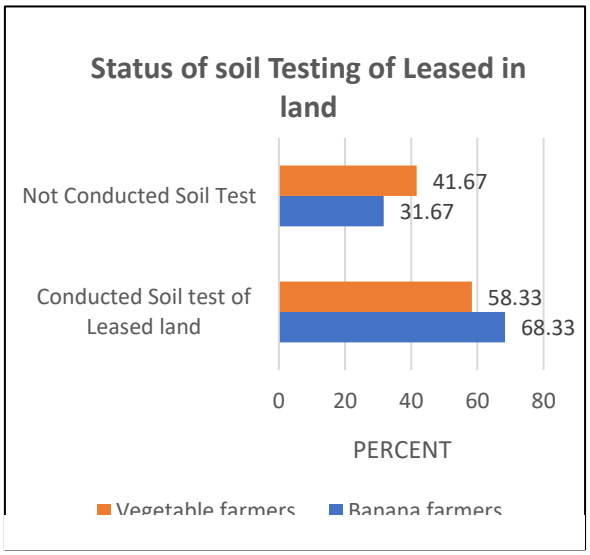

Fig. 26 Distribution based on soil testing

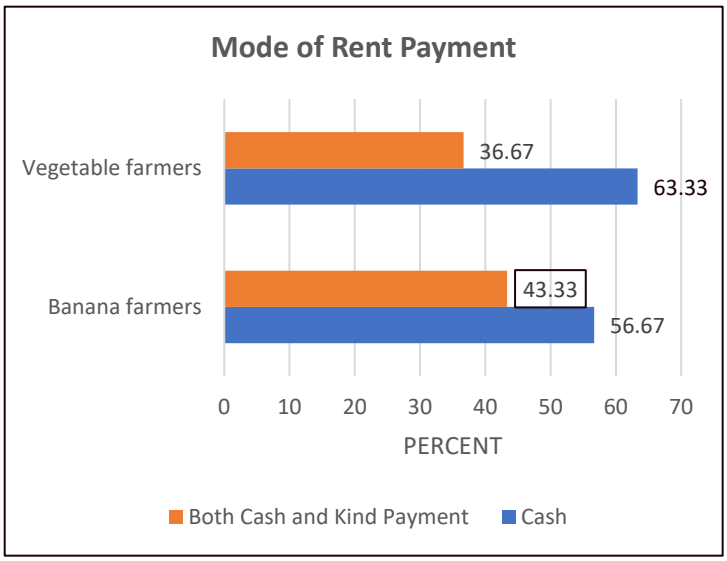

Fig. 27 Distribution based on mode of rent payment

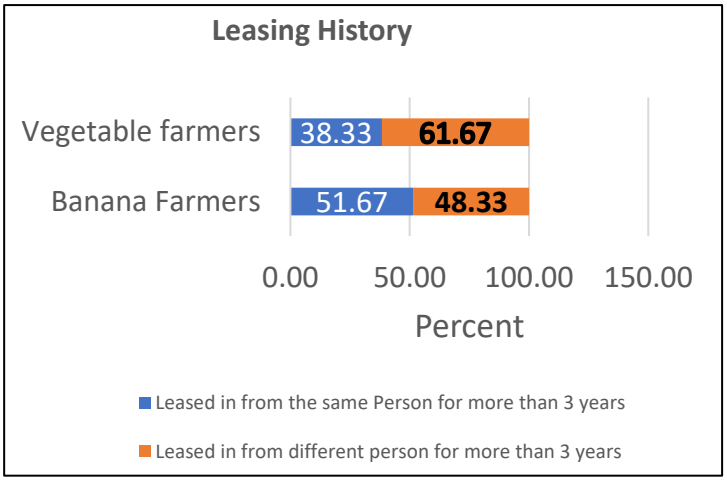

Fig. 28 Distribution based on leasing history

4.3 Analysis of impact of lease land farming on livelihood security

4.3.1 Analysis of perceived impact of farmers

Perceived impact of lease land farming on livelihood security of women farmers was conceptualized based on the five dimensions as follows based on the procedure followed by Padaria,2014.

1. Perceived impact on food and nutritional security
2. Perceived impact on economic security
3. Perceived impact on agricultural resource security
4. Perceived impact on health security
5. Perceived impact on social security

Table 4.35 Distribution of women farmers based on perceived impact score

Perceived impact score	Banana farmers		Vegetable farmers		Total	
	Range	**F (%)**	**Range**	**F (%)**	**Range**	**F (%)**
Low impact	59.2-68.25	13(21.67)	48-64.18	20(33.33)	48-65.91	27(22.5)
Medium impact	68.26-74.89	**24(40)**	64.19-71.92	**17(28.33)**	65.92-74.93	**59(49.17)**
High impact	74.9-82.4	23(38.33)	71.93-81.6	23(38.33)	74.94-82.4	34(28.33)
		60(100)		**60(100)**		**120(100)**

A perusal of the data indicates that 49.17 percent of women farmers were coming under medium impact category followed by 28.33 percent under high impact and 22.5 percent coming under low impact category. This indicates that women farmers are of the opinion that lease land farming had a positive impact on their livelihood security

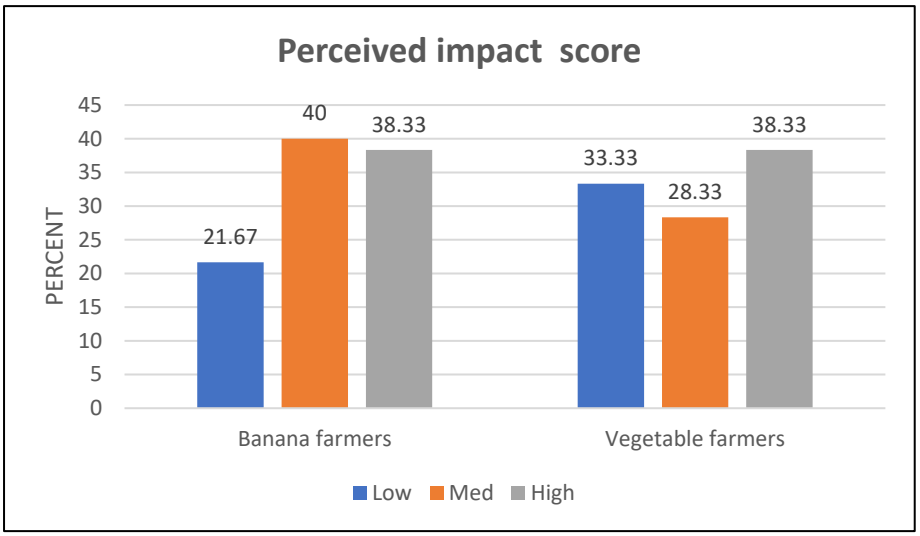

Fig. 31 Distribution of women farmers based on perceived impact score

In the case of banana farmers,40 percent were coming under medium category followed by 38.33 percent in high and 21.67 percent in low categories. The case of vegetable farmers was also not different. Around 38.33 percent were coming under high impact category followed by 33.33 percent in low and 28.33 percent in medium category.

From the results, it can be concluded that perceived impact of lease land farming on livelihood security was more among banana farmers compared to vegetable farmers.

4.3.2 Comparison of perceived impact score of vegetable and banana farmers

Table 4.36 Test Statistics-KS test

Kolmogorov-Smirnov Test of normality			
Perceived Impact score	Statistic	df	Sig.
Banana	.090	60	**.017**
Vegetable farmers	.108	60	**.000**

The Kolmogorov Smirnov test was conducted to test the null hypothesis that a set of data comes from a normal distribution. The Kolmogorov Smirnov test produces test statistics that are used (along with a degree of freedom parameter) to test for normality. Since the p value, 0.017 is less than 0.05, the null hypothesis is rejected. So nonparametric test is suited for the data analysis of this variable.

Table 4.37 Test statistics- Mann Whitney U Test

	Category	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Asymp. Sig. (2-tailed)
Perceived impact score	Banana farmers	60	67.97	4078.00	1352.000	**.019**
	Vegetable farmers	60	53.03	3182.00		
	Total	120				

Mann Whitney U test works by firstly constructing a ranked list of the observations labelled in their two groups. Here banana farmers have a higher mean rank than vegetable farmers. In the test statistics table, the U statistic is given as 1352 and the p value is less than .05 ($p<.05$), rejecting the null hypothesis that there is no significant difference between the two groups.

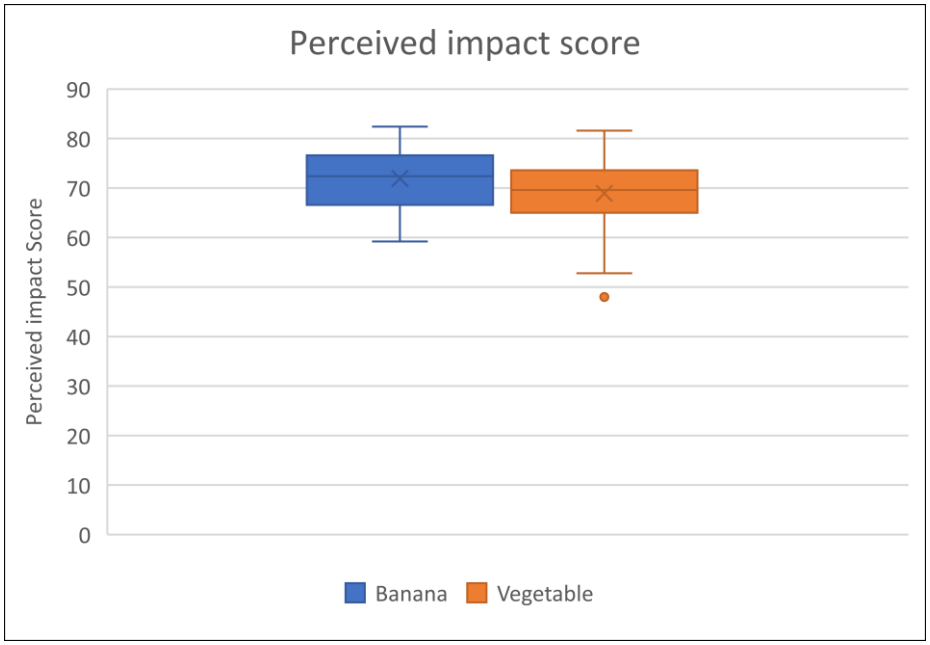

Fig. 32 Box plot showing perceived impact score of women farmers

4.3.3 Analysis of perception of facilitators regarding impact of lease land farming on the livelihood security of members of women collectives

4.3.3.1 Profile characteristics of facilitators

Age

Table 4.38 Distribution of facilitators according to age

Category	Frequency	Percentage
Young	15	50
Middle	13	43
High	2	7
	30	**100**

Educational status

Table 4.39 Distribution of facilitators according to educational status

Category	Frequency	Percentage
Plus Two	12	40
Degree and above	18	60
	30	**100**

Majority (50%) of facilitators belonged to young category and remaining 43 percent in middle category and 7% in old category. It also indicates that young facilitators are delegated with the responsibility of supervision of JLGs thus having more productive workforce.

Regarding educational qualification 60 percent of facilitators had degree and above as while remaining 40 percent possessed higher secondary education. It also indicates that educated personnel were appointed as the facilitators in supervising the lease land farming activities of JLGs. This may be due to fact that data entry and other documentation works are to be carried out by the facilitators on a regular basis and this requires computer skill along with technical expertise.

4.3.3.2 Perception of facilitators on the impact of lease land farming on the livelihood security of members of women collectives

The distribution of facilitators based on perceived impact of lease land farming on livelihood security of women farmers is presented in Table 4.40. The facilitators were grouped into three categories, low, medium and high based on cumulative square root frequency (CSRF) method.

From Table 4.40 it is clear that 36.67 percent each of facilitators belonged to low and high while 26.67 percent in medium categories respectively.

Majority of the officials were of the opinion that the lease land farming had positive impact on livelihood security of women farmers. The facilitators also opined that loan recovery was greater than 90 % and it was mainly due to high credit orientation expressed by group members. This clearly shows that the JLG members were empowered and their livelihood security was improved through lease land farming.

The distribution of facilitators based on perceived impact of lease land farming on livelihood security of women farmers is presented in Table 4.40. The facilitators were grouped into three categories, low, medium and high based on cumulative square root frequency (CSRF) method.

From Table 4.40 it is clear that 36.67 percent of facilitators belonged to low and high while 26.67 percent in medium categories respectively.

Majority of the officials were of the opinion that the lease land farming had positive impact on livelihood security of women farmers. The facilitators also concluded that loan recovery was greater than 90 % and it was mainly due to high credit

orientation expressed by group members. The JLG members empowered through lease land farming thus showed improvement in their livelihood security.

Table 4.40 Distribution of facilitators based on perceived impact score

Category	Range	Frequency	Percentage
Low impact	66-80.61	11	**36.67**
Medium impact	80.62-91.36	8	26.67
High impact	91.37-100	11	**36.67**
		30	**100**

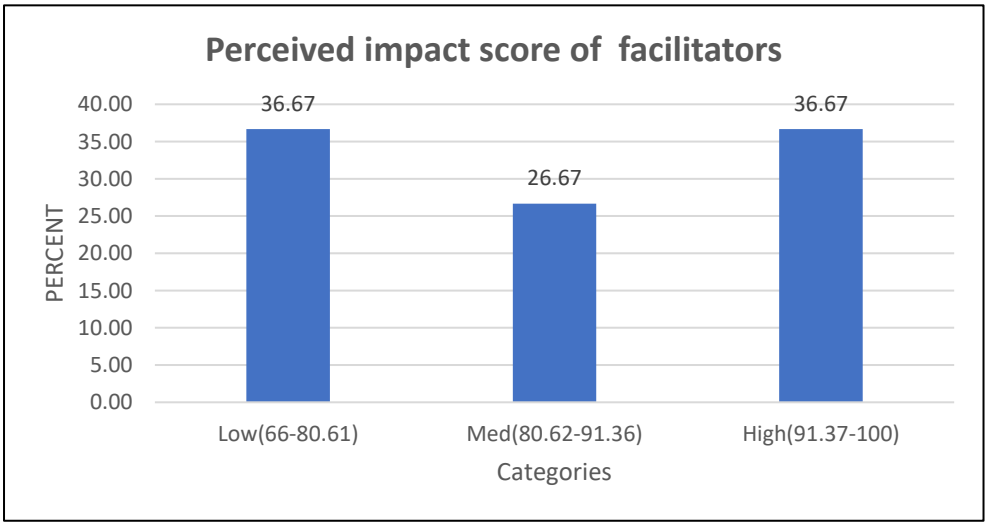

Fig. 33 Distribution of facilitators based on perceived impact score

4.4Assessment of livelihood security index (LSI) of women farmers and distribution of women farmers according to LSI

4.4.1 Livelihood security index (LSI) of banana and vegetable farmers

Livelihood security of the women collective farmers was measured using the Livelihood Security Index (LSI) developed by Argade (2014) with modification. The study had adopted a multi-dimensional approach in understanding the livelihood security of rural people. Five dimensions viz., food and nutritional security, economic security, agricultural resource security, health security, and social security were measured separately using appropriate indicators. Table 4.41 presents the component wise mean index analysed for livelihood security of respondents. Mean index is the average of unit scores ($U_{i)}$ of the respondents for each component.

Table 4.41 Components of LSI of banana and vegetable farmer and mean index

Components	Mean index	
	Banana farmers	**Vegetable farmers**
Food and nutritional security	4.13	4.03
Economic security	**4.84**	2.80
Agriculture resource security	4.11	3.22
Health security	4.76	2.85
Social security	3.99	**4.84**

It could be concluded from the Table 4.41 that the economic security was found to be highest for banana farmers while social security was found to be highest for vegetable farmers. This indicated that the banana farmers are more economically stable thus contributing to economic security. While vegetable farmers are more socially secure. A cursory glance of data also indicates that economic security of vegetable farmers is low and social security of banana farmers is low.

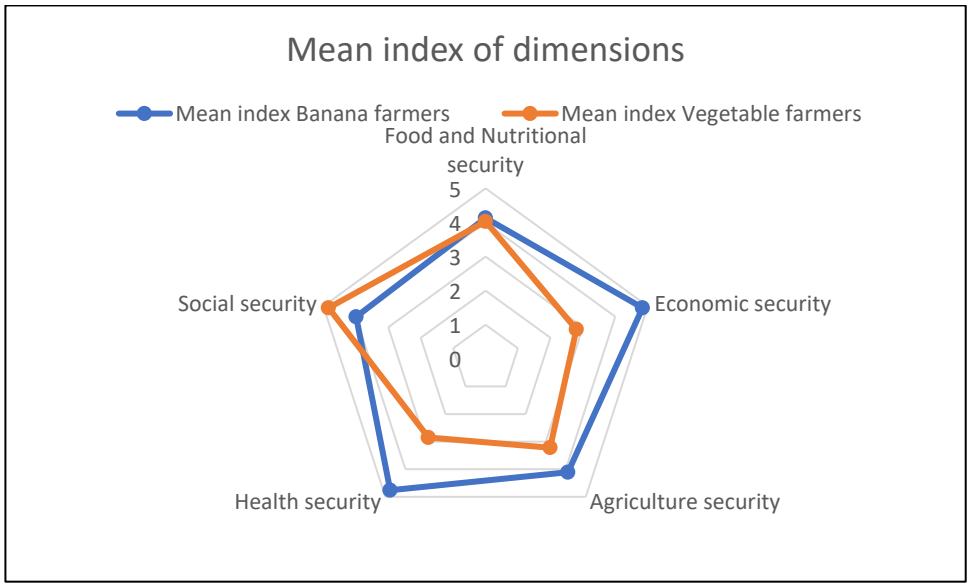

Fig. 34 Spider web diagram showing mean index of dimensions

4.4.2 Distribution of respondents according to livelihood security index (LSI)

The distribution of respondents based-on LSI is presented in Table 4.42. Cumulative square root frequency (CSRF) methodology was to categorize respondents into three groups, viz. low, medium and high.

A cursory glance of the values shown in the Table 4.42 revealed that majority of the banana and vegetable farmers were placed at medium level of livelihood security index, i.e., 40% and 40% respectively, which was a sign of their development status.

Table 4.42 Livelihood security index of banana and vegetable farmers

Category of Respondents	Category of LSI	Frequency	Percentage
Banana Farmers (N=60)	Low (0.52-0.64)	11	18.33
	Medium (0.65-0.74)	25	**41.67**
	High (0.75-0.9)	24	40
Vegetable Farmers (N=60)	Low (0.14-0.35)	21	35
	Medium (0.36-0.64)	20	**33.33**
	High (0.65-0.78)	19	31.67

4.5 Distribution of respondents according to different components of LSI and comparison of livelihood security of banana and vegetable women farmers

4.5.1 Distribution of respondents according to food and nutritional security

Food and nutritional security indicates the availability and access to food to meet the nutritional needs of the family members. An examination of the data in the Table 4.43 showed that 40% of banana farmers and 40 percent of vegetable farmers belonged to medium level of food security. It also revealed that, 26.67 % of banana farmers and 38.33% of vegetable farmers belonged to low category. Remaining 33.33 percent of banana farmers and 21.67 percent of vegetable farmers were under high category. The majority of the households of JLG women engaged in lease land farming were experiencing food and nutritional security. These findings also conform the observations of Bairwa *et al.* (2014).

Availability of food depended on internal production and imports from surplus regions and Public Distribution System (PDS). Sufficient quantity of food was available for majority of the respondents either through the products from their farm or through PDS. Most of them were selling their produce only after storing the amount they required for their households. Kerala, a chronically food deficit state which always had to depend on imports from other states to meet the domestic demand (Kasim, 2012). Therefore, initiatives like lease land farming should be promoted for ensuring food security.

Table 4.43 Distribution of respondents based on food security index

Category	Category of FSI	Frequency	Percentage
Banana farmers (N=60)	Low (0-2.93)	16	26.67
	Medium (2.9-4.96)	24	**40.00**
	High (4.84-6.85)	20	33.33
Vegetable farmers (N=60)	Low (0-2.13)	23	38.33
	Medium (2.14-4.37)	24	**40.00**
	High (4.38-6.77)	13	21.67

4.5.2 Distribution of respondents according to economic security

The data in Table 4.44 showed that (41.67%) of the banana farmers respondents had medium level of economic security followed by 33.33 % in high level of economic security followed by 25 percent 28.33 percent of vegetable farmers are coming under high category. Remaining 25% and 26.67 % of banana and vegetable farmers are coming in low category of economic security. More respondents of banana farmers are coming under high category of economic security may be due to a fair income generated from farming

Table 4.44 Distribution of respondents based on economic security index

Category of Respondents	Category of the ESI	Frequency	Percentage
Banana Farmers (N=60)	Low (0-3.47)	15	25.00
	Medium (3.48-5.18)	25	**41.67**
	High (5.19-6.63)	20	33.33
Vegetable Farmers (N=60)	Low (0-1.73)	16	26.67
	Medium (1.74-4.3)	27	**45.00**
	High (4.4-6.33)	17	28.33

4.5.3 Distribution of respondents according to agricultural resource security

Agricultural resource security of women farmers is more important for sustaining their livelihood. The agricultural resource security of women farmers was measured with the parameters like labour availability, market accessibility, land holding size, irrigation source, availability of leased land, fertility status of land and agri input accessibility. The results shown in Table 4.45 clearly indicated that the (25%) of the banana farmers and (33.33%) of vegetable farmers had low level of agricultural security. While 40% banana farmers and 31.67% of vegetable farmers had medium level of agricultural security. The results also indicates that 35% of both banana and vegetable farmers had high agricultural security.

Table 4.45 Distribution of respondents based on agricultural resource security index

Category of Respondents	Category of the ASI	Frequency	Percentage
Banana Farmers (N=60)	Low (0-52-3.87)	15	25
	Medium (3.88-5.57)	24	**40**
	High (5.58-6.98)	21	**35**
Vegetable Farmers (N=60)	Low (0-2.19)	20	33.33
	Medium (2.2-4.47)	19	31.67
	High (4.48-6.5)	21	**35**

4.5.4 Distribution of respondents according to health security

A perusal of the data in the Table 4.46 showed that the health security of the majority (41.67%) of the banana farmers were under medium category. While 31.67 percent of vegetable farmers lies in medium category. Data also indicates that 30% of banana and 15 % of vegetable farmers were in low category. While 28.33% and 23.33% of banana and vegetable farmers were in high category of health security.

It is important to note that owing to women's participation in farming activities, which helped to maintain physical fitness, lifestyle diseases like diabetes and cholesterol were relatively less common among women farmers.

Health security also intended to measure the health status of the family and access to health care facilities.

The facilities and services offered by government hospitals need to be enhanced, considering the fact that a majority of respondents depend on primary health centres for medical care.

Table 4.46 Distribution of respondents based on health security index

Category of Respondents	Category of HSI	Frequency	Percentage
Banana Farmers (N=60)	Low(0-4.64)	18	30
	Medium(4.65-5.53)	25	**41.67**
	High(5.54-6.03)	17	28.33
Vegetable Farmers (N=60)	Low(3.77-4.43)	9	15
	Medium(4.44-5.12)	37	**61.67**
	High(5.13-5.78)	14	23.33

4.5.5 Distribution of respondents according to social security

The social security of the respondents was evaluated in terms of their social participation, savings, thrift loans, mutual trust and solidarity and social status of the family.

The majority of the women collective farmers could only achieve a medium level of social security, according to the results presented in Table 4.47. Around 48 % of women farmers were under the high and 13.33% in low categories of social security respectively.

The majority of banana farmers (46.67%) had a medium level of social security. More than 30 percent of banana farmers were under the high category. When we looked at the data of vegetable farmers, 38.33 percent of them were under medium category.

This was an indication that participation in SHG activities had improved the social security of women in the society. All the women farmers being the members of the *Kudumbashree mission* got the opportunity to come out of their households and could recognize the skills they had. The women farmers improved their leadership abilities by taking part in group activities. The key to build an empowered society is active social participation . All of them agreed that participation in the group activities had improved their social status.

Table 4.47 Distribution of respondents based on social security index

Category of Respondents	Category of the SSI	Frequency	Percentage
Banana Farmers (N=60)	Low(3.31-3.93)	13	21.67
	Medium(3.94-4.38)	28	**46.67**
	High(4.39-5.08)	19	31.67
Vegetable Farmers (N=60)	Low(0.08-3.24)	8	13.33
	Medium(3.25-4.57)	23	38.33
	High(4.58-5.3)	29	**48.33**

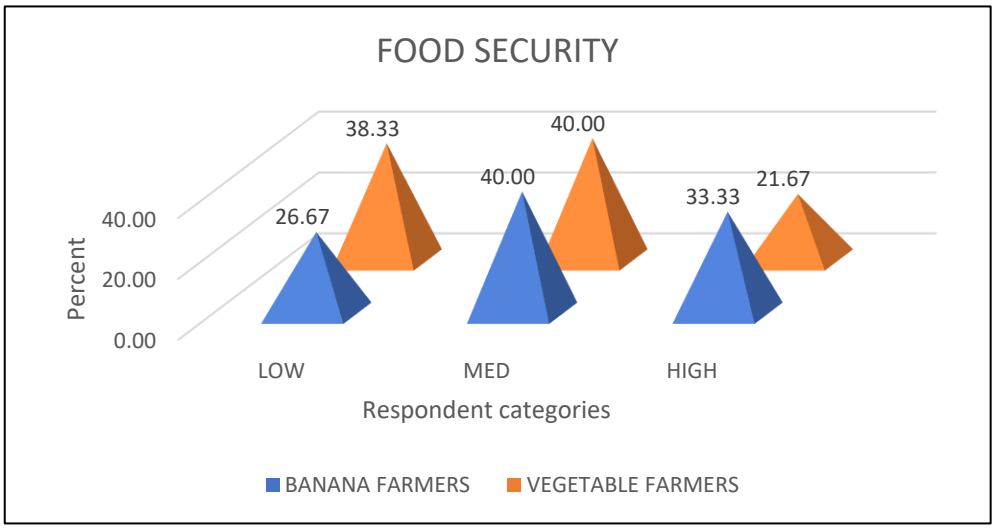

Fig. 35 Distribution of respondents based on food security index

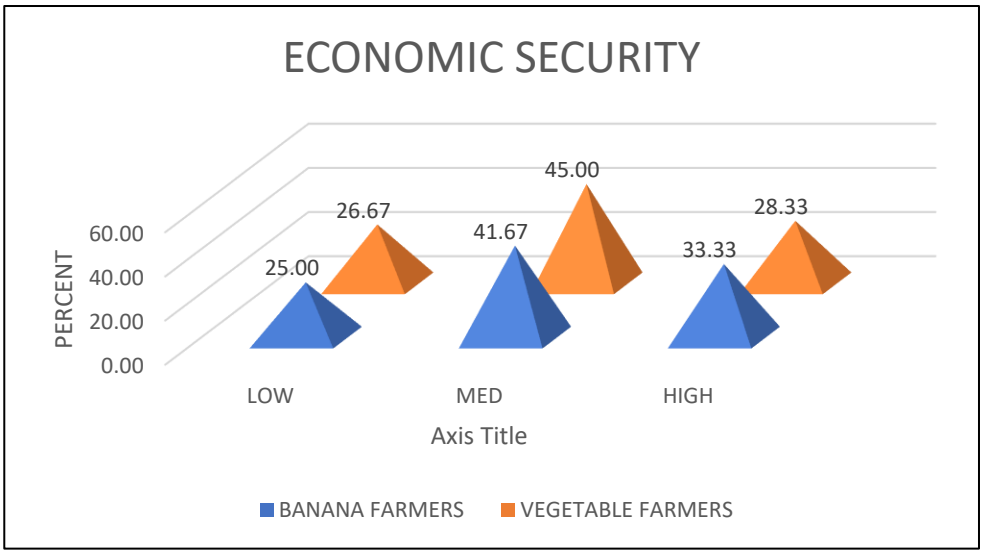

Fig.36 Distribution of respondents according to economic security index

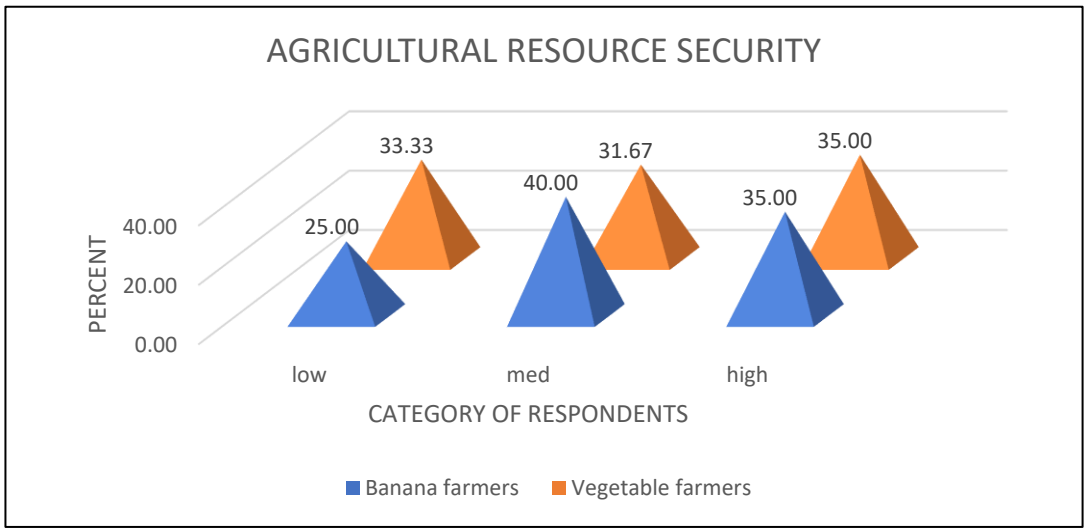

Fig.37 Distribution of respondents according to the agricultural security index

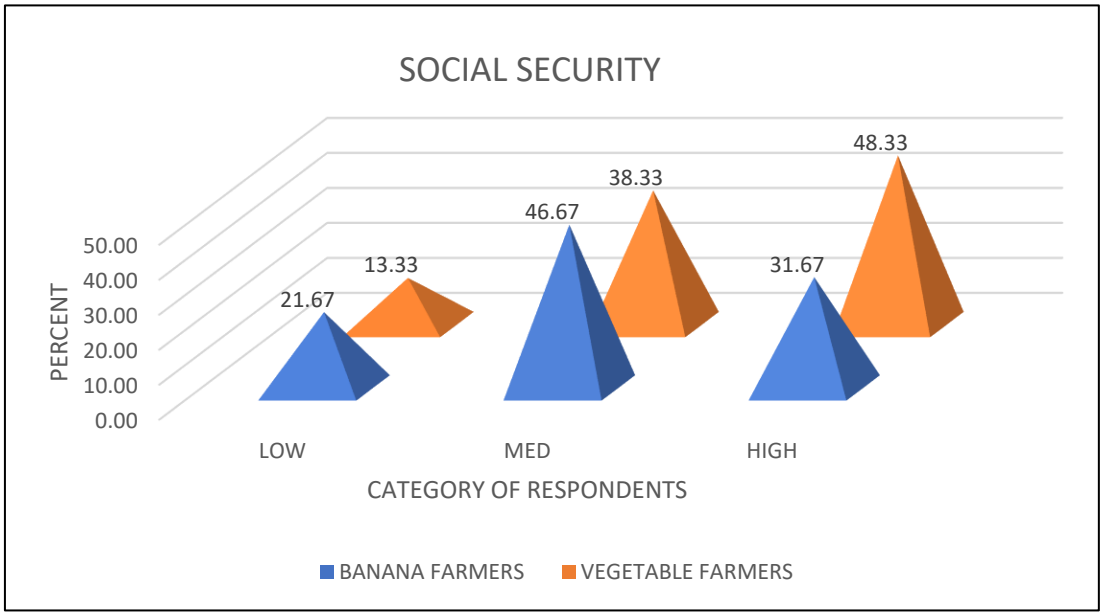

Fig.38 Distribution of respondents according to the social security index

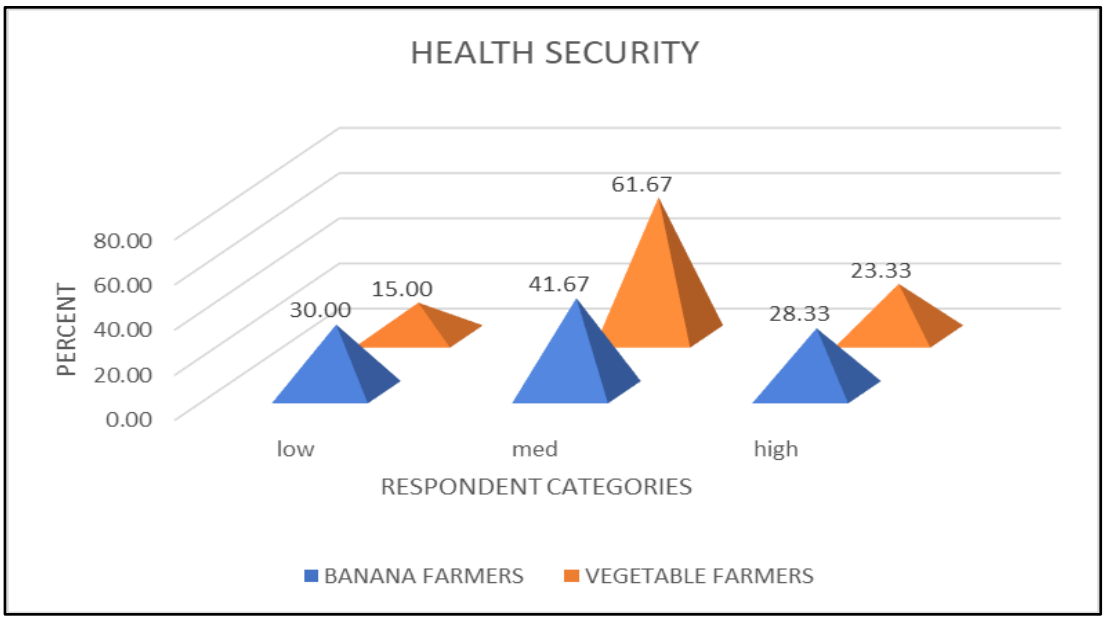

Fig.39 Distribution of respondents according to the health security index

4.5.6 Comparison of the livelihood security of banana and vegetable women farmers.

Prior to performing any statistical test, the idea of distribution of data is very significant and therefore the conduct of normality test is a prerequisite.

Table 4.48 Test of normality -LSI

Kolmogorov-Smirnov Test of Normality			
Category	Statistic	df	Sig.
Banana farmers	.069	60	**.200**
Vegetable farmers	.171	60	**.100**

The variable data is normal due p>0.05, the data is in normally distributed and for comparing a normal data of two independent sample t test is employed.

Independent sample t-test is used for testing the mean difference of a specific attribute of two unrelated or independent samples. Here the independent sample includes banana and vegetable farmers. The attribute in this study is the livelihood security index of women farmers engaged in lease land farming. Table 4.49 shows that banana farmers are significantly different from vegetable farmers with regard to the livelihood security index. The livelihood security index of banana farmers is higher than vegetable farmers. An examination of group means indicate that banana farmers' livelihood security index (M=0.7049) is significantly higher than that of vegetable farmers (M=0.4704). The mean difference of livelihood security index between banana and vegetable farmers is 0.23455. The t value of 7.802 is significant at 1 percent level.

Table 4.49 Test statistics -Independent sample T test -LSI

Category	Mean Livelihood security index	Standard deviation	t	p
Banana Farmers	**0.7049**	**.08850**	**7.802**	**<0.01**
Vegetable Farmers	**0.4704**	**.21540**		

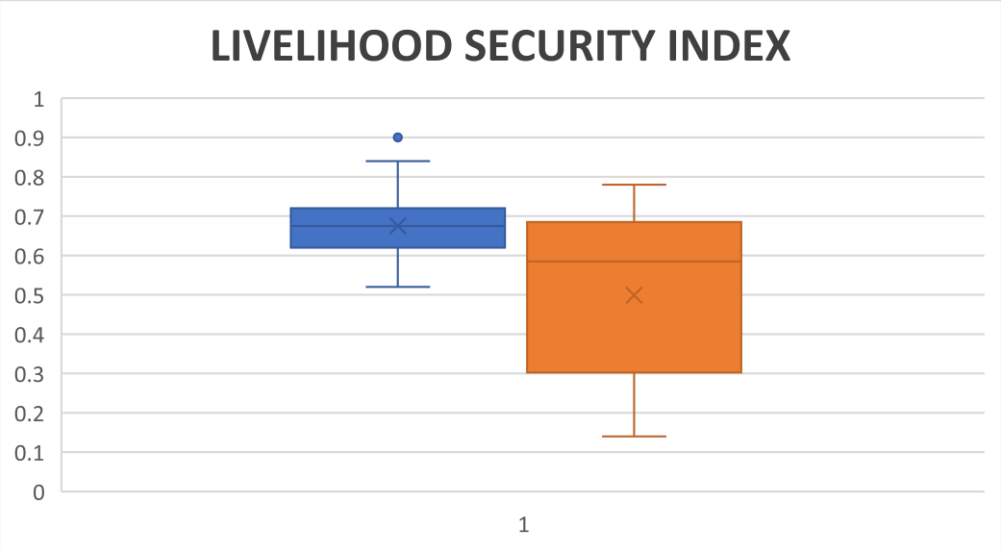

Fig. 40 Boxplot showing LSI of banana and vegetable farmers

4.5.7 Comparison of banana and vegetable farmers with respect to each dimension of LSI

Table 4.50 Comparison of respondents with respect to each dimension of LSI

Components	Mean Index		t value
	Banana farmers	Vegetable farmers	
Food and nutritional security	4.13	4.03	**3.265***
Economic security	4.84	2.80	**2.978***
Agricultural resource security	4.11	3.22	**5.00***
Health security	4.76	2.85	0.369
Social security	3.99	4.84	0.539

***Significant at 0.05 level**

A perusal of the data in the Table 4.50 indicates that the banana farmers had significantly higher mean index in the components like food and nutritional security, economic security, agricultural resource security, and health security except social security. It is to be noted that the mean index of social security of vegetable farmers was higher than that of banana farmers.

4.6 Relationship between Livelihood security index (LSI) and selected personal, social and psychological characteristics of the respondents

Correlation analysis is a method of statistical evaluation used to study the strength of relationship between two variables. The spearman correlation coefficient 'rho' measures the strength and direction of a linear relationship between two variables. Correlation analysis was performed between livelihood security index and 12 personal and socio-psychological characters under study. Table 4.51 shows the correlation coefficient 'rho' values obtained as a result of correlation analysis.

Table 4.51 Correlation between LSI and selected personal, social and psychological characteristics of the respondents

Sl.No.	Independent variables	Co-efficient of correlation value "rho"
1	Age	**0.196***
2	Education	0.529
3	Annual income	**0.053***
5	Occupation	0.170
6	Family size	**-0.238****
7	Achievement motivation	**0.204***
8	Social participation	**0.363****
9	Extension agency contact	**0.397****
10	Economic motivation	**0.176***
11	Attitude towards Group Farming	.0.039
12	Mass media Exposure	-0.048

***Significant at 0.05 level , **Significant at 0.01 level**

The results of correlation analysis revealed that, LSI had a positive and significant correlation with the personal and socio-psychological characters like age, achievement motivation, social participation, extension agency contact, economic motivation and annual income. Whereas livelihood security index had negative correlation with family size. This is owing to the fact that large family size contributed to more dependency ratio and consequently more expenditure. Women with high achievement motivation, Economic motivation had a desire to excel in what they do thus made much profit and income through their activities which in turn resulted in high livelihood security. These results are in confirmation with the findings of Ramya *et al.* (2017).

4.8 Group dynamics effectiveness of the members of women collectives

Group dynamics can be defined as a system of behaviours and psychological processes occurring within a group or between the groups. Group dynamics has an important role in success of JLGs. Adaptation of GDEI included nine indicators based on Bhatt (2009). The weightage scores were calculated using principal component analysis using the procedure of Sendhil, *et.al.* 2017.The indicators include Participation, Teamwork, Group atmosphere, Decision making process, Group cohesiveness, Group leadership, Interpersonal trust, Task function, and Achievement of JLGs. Group Dynamics Effectiveness Index was found out and the respondents were categorized accordingly.

Table 4.52 Distribution of farmers based on GDEI

SI. No.	Categories	Banana farmer		Vegetable farmer		Total	
		Range	**F (%)**	**Range**	**F (%)**	**Range**	**F (%)**
1	Low	32.68-46.17	17 (28.33)	46.14-54.09	19 (31.67)	32.68-49.49	29 (24.17)
2	Medium	46.18-54.08	24 (40)	54.1-60.96	19 (31.67)	49.5-58.08	56 (46.67)
3	High	54.09-70.39	19 (31.67)	60.97-67.29	22 (36.67)	58.09-70.39	35 (29.17)
Total		60 (100)		60 (100)		120 (100)	

From the Table 4.52 it is clear that major share of the respondents of both vegetable and banana farmers belonged to medium category which was 31.67 and 40 per cent respectively. For vegetable farmers remaining (31.67%) and (36.67%) belonged to low and high respectively. While for banana farmers it was, low (28.33%) and high (31.67%) respectively. The findings are similar with that reported by Payal (2019). Group dynamics function has a very significant role in achieving appropriate group participation and execution. So, the results can lead on to the conclusion that, all the operations conducted by the groups must be achieved with maximum participation of all the members.

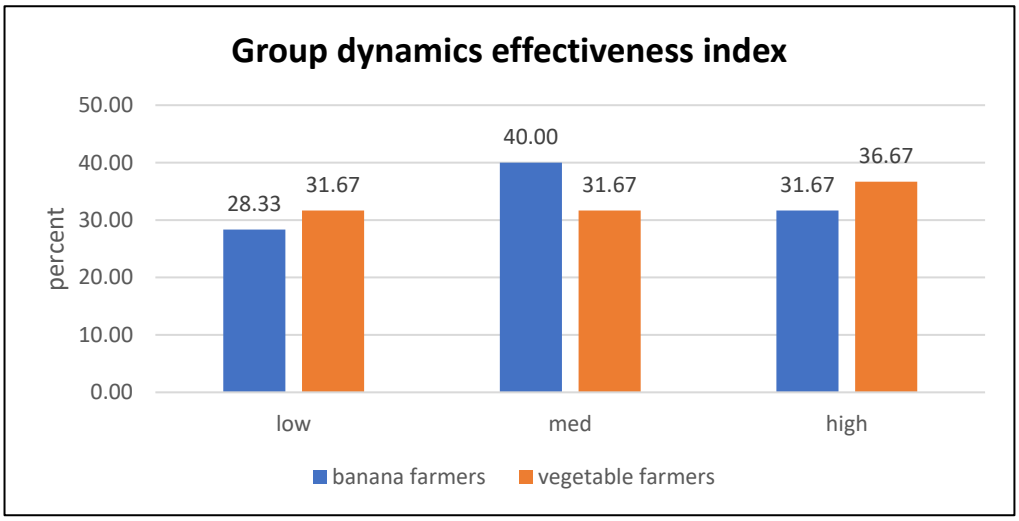

Fig. 41 Distribution of farmers based on GDEI

4.8.1 Distribution of farmers based on indicators of GDEI

Table 4.53 Distribution of farmers based on indicators of GDEI

Indicators of GDEI	Women collective farmers		
	Low	Med	High
Range	2.62-7.08	7.09-8.55	8.56-9.71
Participation	16(13.33)	46(38.33)	58(48.33)
Range	3.68-8.71	8.72-9.94	9.95-10.88
Team work	17(14.17)	68(56.67)	35(29.17)
Range	3.98-6.45	6.46-7.73	7.74-9.29

Group atmosphere	31(25.83)	54(45)	35(29.17)
Range	1.73-4.94	4.95-6.69	6.7-8.22
Decision making process	31(25.83)	42(35)	47(39.17)
Range	2.64-10.73	10.74-11.35	11.36-12.77
Group cohesiveness	79(65.83)	12(10)	29(24.17)
Range	5.16-7.09	7.1-7.47	7.48-11.24
Group leadership	34(28.33)	14(11.67)	72(60)
Range	4.04-5.45	5.46-7.90	7.91-9.75
Interpersonal trust	55(45.83)	34(28.33)	31(25.83)
Range	1.82-5.01	5.02-6.95	6.96-8.69
Task function	31(25.83)	54(45)	35(29.17)
Range	2.46-5.64	5.65-7.18	7.19-8.63
Achievement of JLG	26(21.67)	60(50)	34(28.33)

Table 4.54 The indicators of GDEI and their respective weightages

Sl. No	Indicator	Weightage score	Maximum Score
1	Participation	6.67	50
2	Team work	0.59	50
3	Group atmosphere	0.79	40
4	Decision	0.20	40
5	Group cohesiveness	0.15	30
6	Group leadership	0.20	40
7	Interpersonal trust	0.09	30
8	Task function	0.30	45
9	Achievement of JLGs	0.01	65

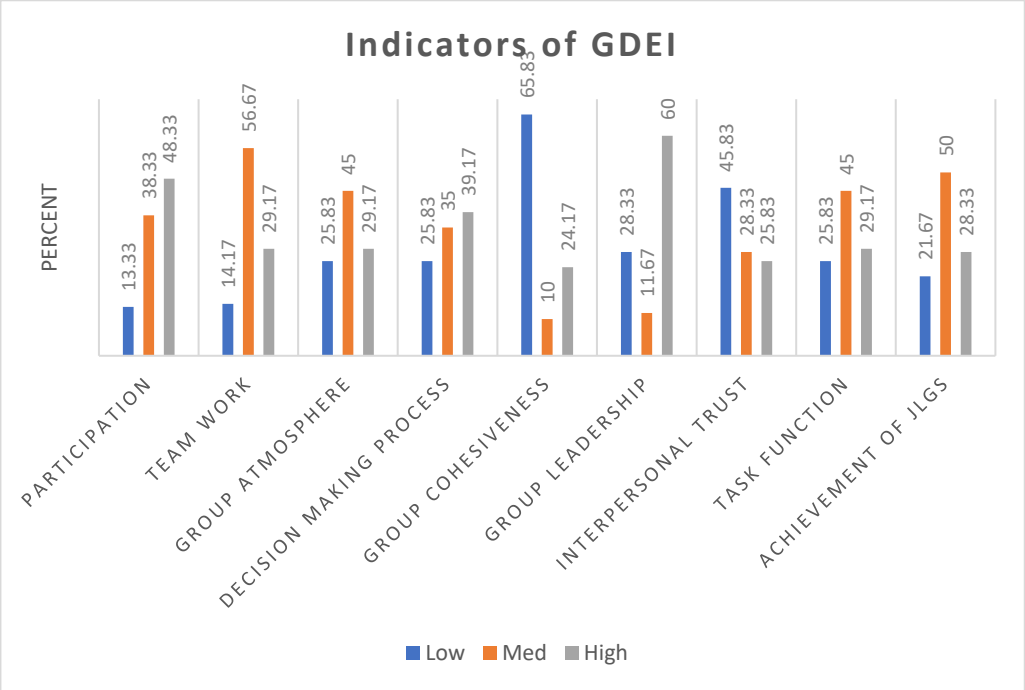

Fig.42 Distribution of respondents based on indicators of GDEI

For effective functioning of the groups, there are various indicators who played important role. The indicators like participation, group cohesiveness, team building, interpersonal trust, and so on, have closely related with group dynamics process of group. In this study nine indicators were selected and the data in this regard are presented in Table 4.50.

The findings of the Table 4.53 revealed that majority of the women farmers were found in high category for the three indicators namely, participation(48.33%), decision making process (39.17 %) and group leadership (60%).

For certain indicators like team work, group atmosphere, task function and achievement of JLG ,56.67 percent,45 percent ,45 percent and 50 per cent of the respondents were found in medium category, respectively.

Another interesting evidence provided by the table is that majority of respondents for the indicators such as group cohesiveness (65.83%) and interpersonal trust (45.83 %) were coming under medium category .

As the total group dynamics effectiveness index itself has already been observed in the medium category, it was only natural that most of the indicators of the GDEI also appeared in the medium category. These findings are in line with those reported by Kumar (1999) and Purnima (2005).

Table 4.55 Test of normality-GDEI

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
GDEI Banana	.073	60	**.172**
GDEI Vegetable	.025	60	**.162**

Test of normality was conducted using Kolmogorov-Smirnov test which showed that the variable is normally distributed owing to the p>0.05. So independent sample T test was performed to compare the group dynamics effectiveness of banana and vegetable farmers.

4.8.2 Comparison of the Group dynamics effectiveness of Banana and Vegetable farmers based on GDEI

Table 4.55 showed that the vegetable farmers were significantly different from the banana farmers with regard to group effectiveness index. An examination of group means indicate that vegetable farmers group dynamics effectiveness (M=57.84) is significantly higher than banana farmers (M=50.09).

Table 4.56 Independent sample T test statistics-GDEI

Category of farmers	**Mean GDEI**	**Standard deviation**	**t**	**p**
Banana Farmers	**50.09**	**7.341**	**6.477**	**<0.01**
Vegetable Farmers	**57.84**	**5.659**		

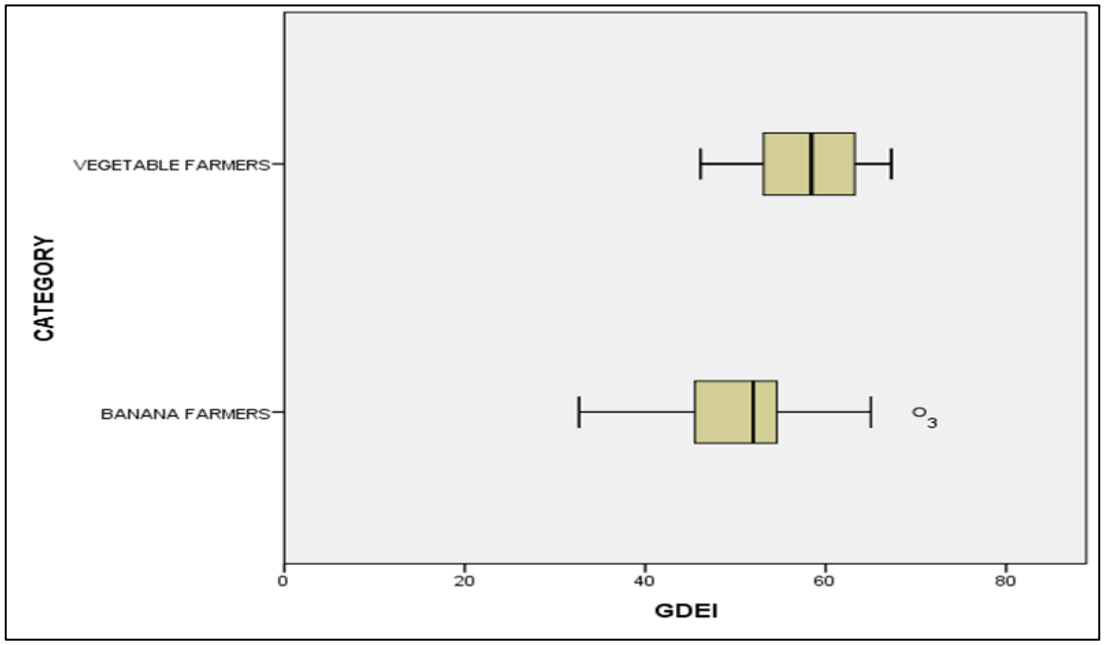

Fig. 43 Boxplot showing GDEI of respondents

4.8.3 Relationship between Group dynamics effectiveness index and selected personal, social and psychological characteristics of the respondents

Group dynamics effectiveness of JLG is not a unit act but a complex process involving sequence of action and activities. The action of individual group member is governed by socio, personal, and psychological characteristics involved in particular situation. Group dynamics effectiveness of member is differing from member to member because of above mentioned attributes. Considering the importance of above characteristics and review of past studies, an attempt has been made in this dimension to ascertain the relationship occurs if any, between personal, social and psychological characteristics of members of JLGs and their GDE. This was determined and tested with the help of spearman correlation coefficient(rho) and the results thus obtained are presented in the following table 4.57.

Table 4.57 Correlation analysis of GDEI and profile

Sl.No.	Independent variables	Co-efficient of correlation value
1	Age	**0.289****
2	Education	**0.368****
3	Annual income	**0.332****
5	Farming experience	0.170
6	Training received	**0.328****
7	Occupation	**0.204***
8	Social participation	**0.363****
9	Extension Agency contact	**0.397****
10	Economic motivation	0.176
11	Market orientation	0.160
12	Innovativeness	**0.183***
13	Achievement motivation	0.074
14	Attitude towards collective farming	.0.039
15	Mass media Exposure	-0.048

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

Improvement in annual income can lead to better productivity and performance of the group. Better farm size promotes to expand the cultivation and also adopt new technologies with more information. Increased social participation can result in exposure to new knowledge through establishing better contacts and this increases the interaction behaviour.

Training received was also had a significant relation with GDEI. Receiving more training will lead to better problem solving capacity and increased attitude towards group management activities. Market orientation and economic motivation

were also positively correlated and created a motivating environment for better group interactions and performance.

These all might be the possible reasons that have contributed to the positive and significant correlation of these characteristics with GDEI. A study conducted by Kumar (1998) found that there was positive and significant relationship between, annual income, farm size, cosmopoliteness, mass media participation and social participation with group dynamics effectiveness index. Cosmopoliteness was positively and significantly related with group characteristics (Jayalekshmi, 2001). The results of present study are in agreement with the above findings.

4.10 Factors affecting lease land farming of women collectives

Various factors affecting lease land farming of women collectives were identified using binomial logistic regression model. This analysis was meant to provide a clear understanding on the odds to have an above or below average perceived impact of farmers when there is a unit increase in independent variables. The results obtained are furnished below. The summary of the results of binary logistic regression is given in Table 4.58.

Table 4.58 Model Summary -Binary logit model

Model Summary		**Omnibus Tests of Model Coefficients**			**Hosmer and Lemeshow Test**		
-2 Log likelihood	Nagelkerke R Square	Chi-square	df	Sig.	Chi-square	df	Sig.
44.440	**.421**	24.401	5	**.000**	5.969	8	**.651**

The overall model is statistically significant Chisquare (5) =24.401, p<.05. This Table 4.58 contains the Nagelkerke R square values, which are sometimes referred to as pseudo-R^2 values and will have lower values than in multiple regression. Therefore, the explained variation in the dependent variable based on our model ranges to 42.1%.

The Hosmer-Lemeshow tests null hypothesis that predictions made by the model fit perfectly with observed group memberships. A chi square statistic is

computed comparing the observed frequencies with those expected under the linear model. A non-significant chi square indicates that the data fit model well.

Logistic regression estimates the probability of an event. It is very common to use binominal logistic regression to predict whether cases can be correctly classified (predicted) from the independent variables. Therefore, it becomes necessary for a method to assess the effectiveness of the predicted classification against the actual classification.

Table 4.59 Factors affecting lease land farming

Sl.No	Variables	B	S.E.	Wald	Sig.	Exp(B)(odds ratio)
1	Age	-.007	.074	1.087	.297	1.080
1	Group dynamics Effectiveness	.610	.855	.509	**.010***	.543
2	Economic motivation	2.49	1.180	4.460	**.035***	12.085
3	Attitude towards group farming	19.172	4976.661	.000	.997	.288
4	Social participation	1.950	.842	5.356	**.021***	7.026
5	Credit orientation	108.33	4979.013	.000	.983	.000
6	Extension agency contact	.037	.002	267.015	**.000****	1.038
7	Achievement motivation	.034	.002	227.894	**.022***	1.606

**** Significant at 0.01 level * Significant at 0.05 level**

The Wald test is used to determine statistical significance for each of the independent variables. The variables, group dynamics effectiveness (p=.010), economic motivation(p=.035) ,social participation (p=.021) ,extension agency contact (p=.000) and achievement motivation (p=.022)added significantly to the model, but attitude towards group farming ,credit orientation, age did not add significantly to the model.

From the odds ratio,there is .543 times chance that the farmer will belong to above average perceived impact category if there is unit increase in group dynamics

effectiveness occurs. Similarly,there is 12.085 times chance that the farmer will belong to above average perceived impact category if there is unit increase in economic motivation occurs.There is 7.026 times chance that the farmer will belong to above average perceived impact category if there is unit increase in social participation occurs.From the odds ratio, there is 1.038 times chance that the farmer will belong to above average perceived impact category if there is unit increase in extension agency contact occurs. There is 1.606 times chance that the farmer will belong to above average perceived impact category if there is unit increase in achievement motivation occurs.

4.10 Challenges faced by women collective farmers

To understand the challenges more specifically garret scoring was done. The challenges were divided into categories like Lease land related, Group related challenges, Technical challenges and Challenges related to supplies and services.

4.10.1Lease land Related challenges faced by the beneficiary farmers

Table 4.60 Lease land related challenges

Sl.No	Challenges	Mean Score	Rank
1	Lack of willingness of some landowners to give their fallow land for cultivation to women collectives	50.28	**V**
2	Disputes between lessor and lessee due to land document issues	30.11	**VIII**
3	**Non-legalized status of leasing of land**	63.10	**I**
4	Lack of proper irrigation facilities in leased in land	44.83	**VI**
5	Little interest of some lessors to invest in land improvement	38.36	**VII**
6	Poor fertility status of leased in land	56.09	**II**
7	Lessors' unreliable approach towards previous agreements	53.37	**IV**
8	High lease land rent and short lease period	55.52	**III**

The farmer's responses regarding challenges related to lease land were recorded and the results are presented in the form of mean score and rank in Table. The ranking on preferential order indicates the primary concerns of the farmers. The review of the above Table 4.60 indicates that farmers were taken the non-legalized status of lease land cultivation in Kerala as a major problem and ranked it as first for collective farming, as pointed out by most of them. The tenancy is banned in Kerala for long but the state has recently permitted only self-help groups to lease land.

Poor fertility status of leased in land got second rank by respondents. The respondents were of the opinion that since leased in land is continually under cultivation of exhaustive crops like banana, it led to poor fertility status of soil. The JLG members were forced to apply more chemical fertilizers in order to get more productivity. Another major limitation cited by women farmers were the high lease rates. There were huge costs and hardships involved in converting a fallow land cultivable. The lease period was too short and many felt that the land owners were 'wary' of letting out to the same groups and therefore on the pretext of 'self/own' cultivation, generally took back the land after a couple of seasons. The 'wariness' resulted from historical influences, particularly the KLRA 1969, which had conferred 'ownership rights' to cultivating tenants. Only in cases where groups had developed 'strong personal connections' with land owners did manage continuity in leasing the same piece of land. The short lease period of about three years was unfair as JLGs had to put in many weeks, and sometimes, months of 'back-breaking' labour for the initial land preparation, particularly if it had been left uncultivated over years. (Abraham,2019).

4.10.2 Group related challenges

Table 4.61 Group related challenges

Sl.No	Challenges	Mean Score	Rank
1	Irregularity in conducting group meetings	60.04	**II**
2	The reluctance of some group members to attend trainings and workshops	55.54	**IV**
3	Lack of willingness of some group members to take up leadership roles	59.54	**III**
4	**Absenteeism of some group members**	61.29	**I**
5	Domestic workload of women and subsequent lack of time	53.79	**V**

The absenteeism of some group members ranked first among all five major problems among the group challenges faced by women farmers in collective farming. Irregularity in conducting group meetings got second rank. Lack of willingness of some group members to take up leadership roles is another major concern faced by the women farmers. The study conducted by Bhatt (2010) among tribal women self-help groups of Vansda taluka in Gujarat also present the same findings.

4.10.3 Technical challenges

Table 4.62 Technical challenges

Sl.No	Challenges	Mean Score	Rank
1	Inadeqaute technical knowledge and skill in plant protection aspects	61.75	**III**
2	Poor adoption of scientific and innovative cultivation practices	48.67	**IV**
3	Inadequate technical knowledge on value addition	66.83	**II**
4	**Improper maintenance of records on farm expenses**	68.63	**I**
5	Inadequate timely and need based training programs offered by the Department of agriculture	37.92	**V**

Among the technical challenges, Improper maintenance of records on farm expenses bagged the first rank. Whereas, Inadequate technical knowledge on value addition got the second rank. The findings of the study were in agreement with the results obtained by Thomas (1998) and Mehala (2012).

4.10.4 Challenges related to supplies and services

Table 4.63 Challenges related to supplies and services

Sl.No	Challenges	Mean Score	Rank
1	High dependence on hired male labour for physically demanding farm operations	50.8	**VIII**
2	Inadequate availability of good quality inputs from government agencies	36.8	**X**
3	Delay in disbursement of credit from supporting agencies	40.4	**IX**
4	Lack of coordination of institutional assistance in timely marketing of produce (Covid-19)	74.0	**II**
5	High hired labour cost	61.3	**V**
6	Inadequate infrastructure facilities for cold storage	52.8	**VII**
7	Inadequate availability of gender-friendly farm machinery	53.2	**VI**
8	**Price fluctuations in market**	**78.7**	**I**
9	High cost of cultivation	70.6	**IV**
10	Climatic vagaries contributing to crop loss	73.1	**III**

Market was the major concern of the beneficiary women farmers regarding problems related to supplies and services. Most of the farmers were depending on the local markets for selling their products. Even though there were monthly and weekly fairs for marketing by *'Kudumbashree'*, only a small per cent of respondents had been benefitted from that. Due to lack of direct marketing, farmers were forced to depend on

middlemen which resulted in low profit from their produce. During peak seasons *Kudumbashree* fairs were not able to sell produce of the farmers and they were forced to sell the produce in cheap rate. Majority of respondents assigned Price fluctuations in market first rank. Lack of coordination of institutional assistance in timely marketing of produce were given second rank by the beneficiary farmers. The third rank was assigned to Climatic vagaries contributing to crop loss. The results are in accordance with the findings of Rashida (2020). The constraints listed above are in line with the findings of Nath,2018.

4.11 Suggestions to improvise the performance of women collectives:

Policy for legalization of land leasing for agricultural purpose should be reformed.

For improving market interventions:

1. Setting up of storage facilities and small-scale value addition units at ward levels to promote procurement and marketing in glut seasons and emergency situations (Covid-19)
2. Encourage online marketing and providing market information through ICT tools

Special training programmes:

1. Technical and financial support on scientific farming practices
2. Capacity building on legal literacy
3. Trainings on farm budgeting and record maintenance
4. Trainings on ICT tools and digital literacy
5. Ensure the service of sufficient qualified manpower

For reducing absenteeism :

1. Prompt members should be given due recognition and appreciation
2. Regular monitoring of attendance may be ensured

Summary and conclusion

5. SUMMARY AND CONCLUSION

This chapter provides an overview of the current study's summary, key findings, conclusions, implications, and recommendations for further research.

The present study was under taken with the following specific objectives:

1. Impact of lease land farming on livelihood security as perceived by women farmers and facilitators

2. Profiling the characteristics and their influence on group dynamics

3. Delineation of factors affecting lease land farming and the challenges faced by women farmers

The present study was conducted in Thrissur district. Ex post facto research design was used. Two blocks were selected based on purposive sampling procedure, each representing more area under vegetable and banana cultivation in Thrissur District. From the respective selected blocks, two panchayats were randomly selected. Fifteen women joint liability groups were selected, comprising 60 women farmers each who cultivate vegetables and banana in leased land, using a simple random sampling method from each of the selected panchayats. Another respondents of 30 facilitators were randomly selected from these two blocks. Thus, the total sampling size of the study includes 150 respondents, which comprise 120 women farmers, and 30 facilitators.

The data was collected with the help of semi structured pretested interview schedule. Thirty independent variables were selected for study by extensive review of literature and expert consultation. This includes age,education,family size and type, marital status, farming experience,occupation,social participation, trainings received & utility of farm women training programmes,status of digital literacy, annual income category, size of landholding, land ownership status, market orienatation,economic motivation, risk orientation, achievement orientation,innovativeness,credit orientation, scientific orientation, environmental orientation, attitude towards collective farming, mass media exposure, extension agency contact, situational variables like size of leased in land, mode of rent payment, status of leased in land, leasing history, rent amount paid by lessee and status of soil testing.

The dependent variable of the study were livelihood security of women farmers, perceived impact score of farmers & facilitators and group dynamics effectiveness index.

Statistical methods like frequency and percentage, mean, and standard deviation were used to analyse the collected data. Binominal logistic regression, Cumulative Square Root Frequency, Independent Sample t Test, Mann Whitney U Test, Spearman Correlation, Garret Ranking, and Principal Component Analysis were also performed.

The salient findings of the study are summarized and presented below:

- **Profile characteristics of women farmers**
  - It was found that 50.8 per cent of the women collective members belonged to middle age category, while 16.7 and 32.5 per cent belonged to old and young age categories respectively.
  - It was found that 31.67 percent had SSLC level of education, remaining 5.83 % had primary education, 25 percent had higher secondary education, 10.83 percent possessed diploma and 18.33 percent possessed degree and above educational qualifications.
  - It was observed that 43.3 per cent of the respondents belonged to medium family size with 4-6 members of family composition. About 19.17 per cent of them belonged to large family size with 7-9 members and 35 per cent of them belonged to small family size having 3 members. Around 2.5 per cent of them were categorized into very large family size with more than 9 members of family composition. Majority (78.3%) of the respondents belonged to nuclear family followed by joint family (21.7%).
  - Majority of the respondents (83.3 per cent) were married women while only 4.16 per cent were not married and the remaining 12.6 percent were widows
  - The data revealed that 64.16 per cent of the farmwomen had medium level of farming experience followed by low level of farming experience (19.16) and high level of farming experience (16.66%).
  - Around 55 percent of respondents were doing agriculture only followed by others (26.7%), Agriculture & Self-employed (7.5%), Agriculture and Animal Husbandry

(5.83%), Agriculture and Private employee (5%). Majority of them were depending on agriculture solely as their livelihood option.

- Results revealed that 35.84 percent of women collective farmers were coming under the medium category of social participation. Around 35 percent of respondents fell in the low category of social participation, while the remaining 29.17% in high category.
- Majority (79.00%) of respondents had attended trainings . Only 22.5 percent of respondents were under the medium category of training utility. While remaining 39.17 percent belonged to high category of training utility. It is noteworthy that only 38.33 percent of respondents were falling in low category of training utility emphasizing the usefulness of trainings beneficiaries were receiving from the supporting agencies. It can be concluded that farmers rated the training programmes as useful.
- It was observed that 69.17 percent of respondents had smartphones, which was relatively high. Only 3.33 percent of the women farmers possessed computers, while 27.5 percent used keypad phones. Only 70 percent of respondents had internet connectivity while remaining 30 percent were not having the connectivity. It was found that 46.67 percent of respondents were of the opinion that they were having moderate level of internet speed. While only 20 percent of respondents were experiencing good internet speed. Remaining 33.33 percent had poor internet speed. Around 61.67 percent of respondents were of the opinion that they are not seeking technical help from others for usage of devices. Based on the analysis of the data, 40.83 percent of respondents used WhatsApp occasionally, while 70% of respondents frequently used Facebook. Majority, 79.17 percent never used digital payment apps. This is an indication of poor digital financial inclusion among rural women. Although *Kudumbashree* took initiative for opening bank account of its beneficiaries, still the financial literacy is not improved among rural women. Also, a majority of respondents (77.5%) didn't even install online shopping apps.
- Majority (49.2%) were under low-income category which shows that because of the low income of their family, they might have moved towards JLG farming for getting an additional income. They were also able to support their family income source

through their earnings. Rest 37.5 percent comes under medium category followed by 13.3 percent in high income category.

- Majority (65%) of the respondents belonged to Below Poverty Line category while rest 35.00 percent in Above Poverty Line category.
- More than 70.00 percent of respondents had marginal landholding,24.2 percent had small landholdings, rest 3.3 percent possessed semi medium and none of them had medium and large landholdings. This is indicating the motivation of respondent to engage in collective farming. That is, women farmers were facing land constraint.
- Only 12.5 percent of women collective farmers owned land in their name. While majority (81.7%) were having land in their spouse's name. Also, 5.8 percent were staying in *Purambokku* land. This clearly indicated gender inequalities in land ownership.
- The major findings from socio psychological variables can be briefed as follows. Majority (46.67%) of farmwomen comes under high level of market orientation while 38.33 per cent of the farmwomen had medium level of market orientation followed by 15 per cent having low market orientation respectively. Majority (42.5%) of farmwomen comes under high level of economic motivation followed by medium level (39.17%) and low (18.33%) of economic motivation. These high levels of economic and market orientation prompted farmwomen to desire for better livelihood option thus took part in collective farming. Majority (45%) of farmwomen were under high level of risk orientation while 28.33 per cent of the women farmers had medium risk orientation followed by low (26.67%) level of risk orientation. It was observed that 55 percent of farmwomen had medium level of achievement motivation followed by 28.33 per cent and 16.67 per cent with high and low levels respectively. Majority (42.5%) of the women farmers had high level of innovativeness followed by 36.67 per cent and 20.83 under low level and 20.83 medium levels respectively. This is supported by various agripreneurship activities followed by women farmers. The data depicted that 44.17 per cent of the farmwomen had high level of credit orientation followed by low (19.17%) and medium levels (36.67%). The data showed that 42.5 per cent of the women farmers were in the medium scientific orientation category followed by 29.17 and 28.33 per cent under high and low categories respectively. A perusal of the data revealed that

55 per cent of the women farmers had medium level of environmental orientation followed by 32.5 and 12.5 per cent having low and high level of environmental orientation, respectively. this is supported by the fact that majority of them are consuming what they produce and eventually leading to judicious application of plant protection chemicals. The data depicted that 35 per cent of the farmwomen had medium level of favourable attitude towards collective farming followed by 32.5 percent in low and high level of favourable attitude towards collective farming. Only individuals with a favourable attitude towards collective farming can sustain and excel in it.

- For the purpose of gathering information about farming, 45 percent of farm women had medium contact with extension agencies, compared to 40.83 percent who had high contact and 14.17 percent who had low contact. Around 37.5 percent of respondents had low mass media exposure and rest 35 percent had high followed by 27.5 percent in medium category. The reason behind a greater number of respondents in low category of mass media exposure can be contributed to the less availability of time due to domestic workload of women in family chores.
- The major findings from situational variables are briefed as follows. Majority (49.17%) of respondents were doing lease land cultivation in marginal land, followed by 22.5 percent in semi medium, ,16.67 percent in small, 8.33 percent in medium and only 3.33 percent in large. This trend in area under lease land cultivation is reiterating the land crisis faced by Kerala for agricultural purposes. Majority (60%) of farmers from women collectives paid their rent only in cash, with the remaining 40% paying both cash and kind payments. Majority (63.33%) of women collective farmers did not conduct soil testing of their leased in land and only 36.67 percent conducted soil test. Majority (53.33%) of farmers from women collectives leased land which was earlier in cultivable status while 46.67 percent of women farmers converted fallow land to cultivable land after taking it for lease. Conversion of fallow land is a great achievement in case of lease land farming.

- **Livelihood security index of women farmers**

- Livelihood security analysis revealed that majority of banana (41.67%) and vegetable farmers (33.33%) were at medium level of livelihood security index, which was a sign of their development status.

- Comparison of LSI of farmers was done using independent sample T test and there was significant difference among the respondent categories where the mean index of banana farmer (0.704) being higher.
- Correlation analysis revealed that LSI had a positive and significant correlation with age, achievement motivation, social participation, extension agency contact, economic motivation and annual income.

•Perceived impact of lease land farming on livelihood security of women farmers as perceived by farmers and facilitators

- Perceived impact score of farmers showed that 49.17 % of women farmers were in medium impact followed by 28.33 % in high and 22.5 % in low impact category.
- Banana farmers have a higher rank than vegetable farmers (U=1352 at $p<.05$) and is statistically significant.
- 26.67 % of facilitators belonged to medium, 36.67 % in low and 36.67 % in high category respectively regarding the impact of lease land farming on livelihood security of women farmers as perceived by facilitators.

- **Group dynamics effectiveness index of women farmers**

- Majority of respondents (46.67%) were in medium category of group dynamics effectiveness, rest (29.17%) in high and (24.17%) in low category.
- Comparison of Group Dynamics Effectiveness Index (GDEI) of farmers showed that there was significant difference among the respondent categories where the mean index of vegetable farmers (57.84) being higher.
- Spearman's rank correlation between group dynamics and profile characteristics revealed that age, education, annual income, trainings received, occupation, social participation, extension agency contact and innovativeness were having significant relation.

- **Factors affecting lease land farming of women collectives**

Factors affecting lease land farming were analysed using binary logistic regression. Group dynamics effectiveness, economic motivation, social participation, extension agency contact, and achievement motivation were found to be significant.

Challenges faced by women farmers

Challenges faced by JLG members were considered under three groups *viz;* lease land related challenges, group related challenges, technical and challenges related to supplies and services.

- Garret ranking was employed for challenges faced by women collective farmers
- Among lease land related challenges, non-legalized status of leasing of land was ranked most serious one.
- In group challenges, the issue of absenteeism of some group members was ranked first
- In technical challenges, improper maintenance of records on farm expenses ranked as most challenging
- Price fluctuations was ranked as first among challenges in supplies and services

Suggestions to improvise the performance of women collectives:

- Policy for legalization of land leasing for agricultural purpose should be reformed.

For improving market interventions:

- Setting up of storage facilities and small-scale value addition units at ward levels to promote procurement and marketing in glut seasons and emergency situations (Covid-19).
- Encourage online marketing and providing market information through ICT tools.

Special training programmes:

- Technical and financial support on scientific farming practices.
- Capacity building on land legal literacy.
- Adequate trainings should be given to women collectives on farm budgeting and follow up activities like auditing of Farm records of JLGs can be done on a regular basis by facilitators.
- Adequate trainings on ICT tools in agriculture and digital literacy should be given to women collectives as there is a need for digital inclusion of women farmers.
- Ensure the service of sufficient qualified agri professionals as facilitators.
- Awareness campaigns on schemes of *Krishibhavan* should be organized.

- **Suggestions for future line of research**

- To generalize the findings, similar research can be conducted in other districts of Kerala with a larger sample size.
- Impact assessment studies can be conducted by comparing pre and post implementation data.

References

6. REFERENCES

Abraham, D.T. 2019a. Lease land farming by women collectives: an enquiry into earnings of *Kudumbashree* groups., Centre for Women's Development Studies, New Delhi, 20p.

Agarwal, B. 2019b. Does group farming empower rural women? lessons from India's experiments. *J. Peasant Stud*. 32p.

Al, W., Orking, G., & Clima, O. 2008. Climate change and food security: a framework document. FAO Rome.

Argade, S.D.2014.A comprehensive study on integrated farming systems for sustainable livelihood security in backward districts of Maharashtra.Ph.D. thesis. National Diary Research Institute, Karnal, Haryana,177p.

Baby, S. 2005. Livelihood security of rural community: A critical analysis (Doctoral dissertation, Indian Agricultural Research Institute; New Delhi).

Beena, C.A. and Sari, T.C. 2014. Socio-economic changes of women through Kudumbashree- A study from Thrissur corporation of Kerala state, India. *VISTAS*. Vol. 3: 30-36.

Bhagyalaxmi, K., Gopalakrishna Rao, V. and Sudarshan Reddy, M., 2003, Profile of the rural women micro-entrepreneurs. *J. Res*., ANGRAU, Hyderabad, 31(4): 51-54.

Bhagyashree, S.P., 2014, A study on capacity building and empowerment of self help groups in Thane district of Maharashtra. M.Sc. (Agri.) Thesis, Acharya N.G. Ranga Agric. Univ. Hyderabad (India).

Bhatt, M. R. 2009. Group dynamics in tribal women Self Help Groups of Vansda taluk in Gujarat. Ph. D. thesis. Anand Agricultural University, Gujarat, 188p.

Biradar, B., 2008, A study on impact of income generating activities on sustainable rural livelihoods of KAWAD project beneficiaries. M.Sc.(Agri.) Thesis, Univ. Agric. Sci., Dharwad, Karnataka (India).

Chambers, R. and Conway, G. 1992. Sustainable Livelihoods: Practical Concept for the 21st Century [on-line]. Available: https://www. Ids.ac.uk/download.php?file=files/Dp296.pdf [Accessed on 14 Aug.2020].

Chambers, R., & Conway, G. (1991). Sustainable livelihood-chambers and conway1991. *Pdf:* Dec.

Chand, R., & Singh, J. (2022). A hazy picture on employment in India. Hindu.

Chithra, N. 2011. Impact of *Kudumbashree* programme on rural women in Kottayam district of Kerala. M. Sc. (Ag.) thesis. University of Agricultural sciences, Banglore, 190p.

Choudhury, P., Roy, R., & Munnangi, A. 2021. Group Leasing Approach to Sustain Farming and Rural Livelihoods: The Journey of Women Farmers in Kudumbashree Kerala. Available at SSRN 3803698.

Deininger, K., Ali, D.A., 2007. Do overlapping property rights reduce agricultural investment? Evidence from Uganda. World Band Policy Research Working Paper 4310, Washington DC, 214 pp.

Department for International Development (DFID). 2000. Poverty Elimination and the Empowerment of Women: Strategies for Achieving the International Development Targets, London: DFID.

Devalatha, C. M., 2005, Profile study of women SHGs in Gadag district of north-Karnataka. M.Sc. (Agri.) Thesis, Univ. Agric. Sci., Dharwad, Karnataka (India).

Devi, P. R. 2003. Micro credit and technology utilization in vegetable production by self help groups in Thiruvananthapuram district. M.Sc. (Ag) thesis,Kerala Agricultural University, Thrissur, 103p.

Frankenberger, T. 1996. Measuring household livelihood security: an approach for reducing absolute poverty. Food Forum, No. 34. Washington, DC, USA.

Githamma., 2007, Management of micro financial institutions on their functioning in empowering of rural poor in Kolar district of Karnataka. M.Sc. (Agri.) Thesis, Univ. Agric. Sci. Dharwad, Karnataka (India).

GOI [Government of India]. 2011. Census of India 2011[on-line]. Available: https://censusIndia. gov.in/2011common/censusdata2011.html.

GOI [Government of India]. 2016. Agricultural Census 2015-16. Department of Agriculture & Cooperation (Agriculture Census Division), Ministry of Agriculture, Government of India,390p. Available:https://agcensus.nic.in/report/manuallandrecord1516.pdf.[Accessed 14 Jan.2022].

GOK [Government of Kerala]. 2011.Economic Review 2010. State Planning Board, Thiruvananthapuram, Kerala,709p. Available: https://spb.kerala.gov.in/sites/default/files/inline-files/ER-2010.pdf[Accessed 15 Aug. 2022].

GOK [Government of Kerala]. 2022.Economic Review 2021. State Planning Board, Thiruvananthapuram, Kerala,606p. Available:https://spb.kerala.gov.in/sites/default/files/202203/ECNO_%20ENG_21_%20Vol_1.pdf. [Accessed 02 June 2022].

GOK [Government of Kerala].2017. Working group report on gender and development, State planning board, Thiruvananthapuram, Kerala,124p. Available: https://spb.kerala.gov.in/sites/default/files/onlinefiles/1.22Gender%2007052017.pdf.[Accessed 30 Aug. 2022].

Haque, T. 2012. Impact of land leasing restrictions on agricultural efficiency and equity in India. 16p (In press)

Jayalaksmi, G. 2001. Empowerment of rural women through Self Help Groups - An action research. Ph. D. thesis. Kerala Agricultural University, Thrissur, 231p.

Kasim,M.C.2012.Food security and nutrition in Kerala: An exploratory approach.*J. Rural Dev.* 31(4):513-534

Kerlinger, F. N. 1983. Foundations ofBehavioural Research. Surjeet Publication,New Delhi, 741 p.thesis, University of Hanover, Germany.102p.

Krishnan, A. U. 2017a. Impact of training programmes on farm mechanization. M. Sc. (Ag.) thesis. Kerala Agricultural University, Thrissur, 135p.

Kudumbashree.2021.Kudumbashreehomepage.Available:https://www.kudumbashree.org/.[Accessed 25 June 2022].

Kumar, B. N. 2017b. A study on knowledge and adoption of rice drum seeder technology in Khammam district of Telengana state. M. Sc. (Ag.) thesis. Professor Jayashankar Telengana State Agricultural University, Telengana, 162p.

Kumar, P. B. 2017c. Institutional Intervention and the Feminization of Farm Sector: Lessons of Experiments with KDMS and MKSP in Kerala. *B-Digest Women in Agric.* 2: 12-35.

Kumar, V. P. 1998. Self help group dynamics of Kerala horticulture development programme. Ph. D. thesis. Indian Agricultural Research Institute, New Delhi, 227p.

Lahiri-Dutt, K., Alexander, K., & Insouvanh, C. 2014. Informal mining in livelihood diversification: mineral dependence and rural communities in Lao PDR. South East Asia Research, 22(1), 103-122.

Madhusekhar, B. R., 2009, A study on marketing behaviour of chilli growers in Guntur district of Andhra Pradesh. M. Sc. (Ag.) Thesis. Acharya N.G. Ranga Agric. Univ. Hyderabad (India).

Manjunath, T., 2010, A study on knowledge and adoption of plant protection measures by paddy growers of Raichur district. M.Sc. (Agri.) Thesis. Univ. Agric. Sci. Dharwad, Karnataka (India).

Manoj, P. K, 2012, Potential of micro enterprises in women empowerment: A critical study of micro enterprises runs by women under the Kudumbashree programme in Kerala. *Int. J. Bus. Policy. Econ*. 5 (2): 1-16.

Manoj, P. K. 2010.Microfinance for economic and political empowerment of women in India: a study with focus on "*Kudumbashree"* experience in Kerala.

Meena, B.S. 2010. Socio-economic characteristics and technology use pattern of farmers. *Agric. Extn. Rev*. 22 (2): 18-20.

Mehala, V. 2012. Economic analysis of Self Help Group in western zones of Haryana.M. Sc. (Ag.) thesis. Choudhary Charan Singh Haryana Agricultural University, 51p.

Mohindra, K. 2003. A report on women Self Help Groups(SHGs)in Kerala state, India: A public health perspective,[on-line]. Available:https://www.researchgate.net/publication/255667336 [14 Feb. 2018].

Mridula, N. (2010). Accomplishing food security through community based initiatives in Thrissur: A participatory analysis (Doctoral dissertation, Department of Agriculture, College of Horticulture, Vellanikkara).

Mridula, N. 2018. Collective farming groups in Kerala-Aspirations and Challenges. *J. Community Mobilization and Sustain. Dev.*, 13(2):259-262.

Nath, U. R. 2017. Women plantation labourers of tea gardens in Idukki district: A multidimensional analysis. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 96p.

Nidheesh, K. B. 2009. Rural women's empowerment is the best strategy for poverty eradication in rural areas. *Int. J. Rural Stud.* 15(2): 58-63.

Obaiah, M. C., 2004, A study on capacity building of rice growing farmers of Farmers Field Schools (FFS) in Krishna - Godavari zone of Andhra Pradesh. *Ph. D* Thesis. Acharya N.G. Ranga Agric. Univ. Hyderabad (India).

Pandey, D. K. and Kumar, M. 2011. *Int. J. of Multidisciplinary Manag. Studies,* vol.1 issue 1, oct 2011, http://zenithresearch.org.in/

Parvathy, S. 2000. Participation of women in agriculture development programmes under people plan in Thiruvanadapuram district. M. Sc. (Ag.) thesis. Kerala agricultural University, Thrissur, 155p.

Patel, S., Dey, A., Singh, R., & Chand, R. (2022). Agriculture and Nutritional Security in India. *Sustainable Agriculture Systems and Technologies*, 1-20.

Patel, S., Dey, A., Singh, R., & Chand, R. 2022. Agriculture and Nutritional Security in India. Sustainable Agriculture Systems and Technologies, 1-20.

Pratap, S. A. 2013. Strategies for developing agripreneurship among farming community in Uttar Pradesh, India. *Int. Multidisciplinary Res.J.* 3(11):1-12.

Priya, R. D. 2003. Micro credit and technology utilization in vegetable production by self help group in Thiruvanadapuram district. M. Sc. (Ag.) thesis. Kerala Agricultural University, Thrissur, 101p.

Purnima, K.S. and Narayanareddy, G.V. 2007. Indicators of effectiveness of women self-help groups in Andhra Pradesh. *J. of Res. (*ANGRAU), **35**(2): 93– 96.

Raghavan, V. P. 2009. Micro-credit and empowerment; A study of *Kudumbashree* projects in Kerala, *India. J. Rural Development* 28(4): 469-484.

Ramachandran, M. T. and Das, A. 2020. Collective farming and women's livelihoods: a case study of *Kudumbashree* group cultivation. *Can. J. Dev. Stud*. 41(4):525-543.

Ramakrishnan, P. S. 1993, Evaluating Sustainable Development with Peoples' Participation, in Moser, F. (ed.), Sustainability -Where Do We Stand?Proc. International Symposium, Technische Universität, Graz, Austria, pp. 165-182.

Rangi, P. S., Sidhu, M. S. and Harjit S., 2002, Economic empowerment of rural women through self help groups: A case study of Fategarh Sahib district, Punjab. *Man and Devt.*24 (3): 65-78.

Rao, R. 2005. Women group herald wind of change in rural Uttaranchal. *Kurukshetra.*31-42p.

Sabira, M. P. 2016. Effectiveness of training interventions of Krishi Vigyan Kendra (KVK), Thrissur in adoption of cool season vegetables, M. Sc. (Ag.) thesis. Kerala Agricultural University, Thrissur, 130p.

Sajeevchandran, A. 1989. Impact of development programmes in promoting pepper production in Kerala, M. Sc. (Ag.) thesis. Kerala Agricultural University, Thrissur, 129p.

Sakeer, H. A. and Anu, S. N., 2006a, Women empowerment through Kudumbasree project of Kerala: A micro level analysis. *MANAGE Extn. Res. Rev.,* 7: 23-43.

Samuel, J. 2006b. Empowerment of rural women through microfinance in Dhindigul district of Tamil Nadu. M. Sc. (Ag.) thesis. University of Agricultural. Sciences, Dharward (India).

Sarada, O., Shivamurthy, M. and Suresha, S.V., 2007, Socio-economic and psychological profile of rural women in SHG. *Mysore J. Agric. Sci*., 41(3): 389-394.

Sarkar, V. 2019. Reinventing the impact of Self Help Group (SHG) towards women empowerment in west Bengal. Ph. D. thesis. Uttar Banka Krishi Viswavidyalaya, West Bengal, 194p.

Sasidharan, A. 2015. Adoption of organic farming technologies in banana and vegetable crops in Kasaragod district. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 164p.

Satyanarayana, K. and Jagadeeswary, V., 2010, A study on knowledge and adoption behavior of livestock farmer. *Indian J. Anim. Res*., 44(2): 100-106.

Savitha, S. S., 2004, Role of rural women in Animal husbandry. M. Sc. (Agri.) Thesis, Univ. Agric. Sci., Dharwad, Karnataka (India).

Seby, S. 2017. Analysis of development programmes for paddy promotion under decentralized planning in Thrissur district. M.Sc. (Ag.) thesis, Kerala Agricultural University, Thrissur, 225p.

Singh, S. 2011. A critical study on participation of rural women in agricultural activities of Hoshangabad district (M.P). M. Sc. (Ag.) thesis. Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior, 86p.

Sreedaya, G. S. 2000. Performance analysis of Self Help Group in Vegetable production in Thiruvananthapuram District. M. Sc. (Ag.) thesis. Kerala

Agricultural University, Thrissur, 150p.

Sreeram, V. 2013. A study on entrepreneurial behavior of members of Kudumbashree NHGs in Palakkad district of Kerala. M. Sc. (Ag.) thesis. Acharya N. G. Ranga Agricultural university, Hyderabad, 164p.

Supe, S.V. 1969. Factors related to different degrees of rationality in decision making among farmer in Buldana district. Ph. D. thesis. Indian Agricultural Research Institute, New Delhi, 95p.

Suresh, 2004, Entrepreneurial behaviour of milk producers in Chittoor district of Andhra Pradesh: A critical study. *M. V. Sc. Thesis,* Acharya N. G. Ranga Agric. Univ., Hyderabad (India).

Thasneem, S. 2016. Technology utilization of banana farmers in Thiruvananthapuram district. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 123p.

Thomas, S. 1998. Role of farm women in planning, management and implementing watershed development programme. M. Sc. (Ag.) thesis. Kerala Agricultural University, Thrissur, 140p.

Tumbe, Chinmay. 2014. "Missing Men, Migration and Labor Markets: Evidence from India." Working Paper No. 028. Delhi: South Asia Research Network (SARNET).

Vasudeva Rao, D., 2003, SHGs and social change. *Social Welfare*, 50 (2): 33-34.

Vengatesan, D and Santha, G. 2003. Coverage of knowledge and skill components under women SHG training. *Maharashtra J. Ext. Educ.* 22(2): 60-66.

Venugopalan, K. 2014. Influence of Kudumbashree on women empowerment: A study. *IOSR J. Bus. Manage,* 16(10): 35-44.

Vipin Kumar V.P. 1999. Correlates of self-help group dynamics of horticulture farmers. *Indian J Ext. Edu.* 2: 2795-2801.

Appendices

APPENDIX I

KERALA AGRICULTURAL UNIVERSITY

COLLEGE OF AGRICULTURE, VELLANIKKARA, THRISSUR

QUESTIONNAIRE FOR WOMEN FARMER

PART I

The information furnished will be used only for the research purpose and the data will be kept strictly confidential.

SOCIO-PERSONAL VARIABLES

Respondent No-

Profile of the farm women

1. Name of respondent:

2.Address & Phone number:

Name of Panchayat:

Name of Block:

3.Age:

a. **Upto 35 years (Young)**
b. **36-50 years (Middle)**
c. **Above 50 years (Old)**

4.Size of the Family:

a. Small Family (Upto 3 members)
b. Medium Family (4-6 members)
c. Large family (7-9 members)
d. Very large family (More than 9 members)

5.Family Type

a. Nuclear family (1)

b. Joint Family (2)

6. Educational status:

a) Functionally literate (0)
b) Primary school (1)
c) SSLC (2)
d) Higher Secondary (3)
e) Diploma (4)
f) Degree and above (5)

7. Marital status

a. Married (1)

b. Single/Unmarried (2)

c. Widow (3)

8.Annual income:

a. Upto 50,000/- (1)
b. 50,001-5 lakh (2)
c. Above 5 lakh (3)

9.Occupation

a. Agriculture only(1)

b. Agriculture and Animal Husbandry (2)

c. Agriculture and Private employee(3)

d. Agriculture and Self employed(4)

e. Others(5)

11.Size of land holding

a) Marginal <1 Ha
b) Small1-1-2 Ha
c) Semi Medium 2-4 Ha
d) Medium 4-10 Ha
e) Large (>10 Ha)

Category	Area (Ha)
Total	

12. Land ownership

Category	Area (Ha)
Land owned by Women farmer	
Land owned by spouse	
Purambokku	

13.BPL category

a. BPL
b. Non-BPL

14.Farming Experience

a. Less than 5 years (1)
b. 5-10 years (2)
c. Above 10 years (3)

15. Did you attended any trainings related to crop production?

a. Yes (1)
b. No (2)

If yes;

Sl.No	Dimensions	Rating given to training programme	
		Useful (1)	Not useful (0)
1	Usefulness in Technical Knowledge and Skill Gain		
2	Extent of Fulfilment of Needs		
3	Benefit from Group interactions during Training		

4	Usefulness of Training experience in Daily life		
5	Usefulness in getting credit support from organizations		

16. Social Participation

Name of social organisation	Membership status			Extent of participation		
	Non member (0)	Member (1)	Office bearer (2)	Regular (2)	Occasionally (1)	Never (0)
Farmers Club						
VFPCK						
Local self Govt. (LSGI)						
Women's association (Excluding *Kudumbhasree*)						
Socio -cultural - religious organization						
Any others (Specify)						

17.Mass media exposure

Sl.No	Mass media	Frequency of use		
		Regularly (2)	Occasionally (1)	Never (0)
1	Radio			
2	Newspaper			
3	Television			
4	Magazines/Bulletins/leaflets			

5	Social media (Whatsapp,Instagram,Facebook)	

18.Extension agency contact

Extension agency	Frequency		
	Regularly (2)	Occasionally (1)	Never (0)
Agricultural officers			
ATMA personnels			
KVK personnel			
Kudumbhashree officials			
VFPCK personnel			

Psychological variables

19. Market orientation

Sl. No.	Statements	SA	A	N	D	SD
1	A farmer can get good price by grading his products					
2	If a farmer is provided with better storage facilities, he can fetch better price					
3	Farmer should grow those crops/varieties which have more market demand					
4	A farmer can get good price by eliminating middlemen					
5	Cooperatives can help farmers in fetching a better price by pooling of produce					
6	Farmer should sell his produce to the nearest market irrespective of the price (N)					
7	Market is one of the vital places for a farmer					

20. Economic motivation

Sl. No.	Statements	SA	A	N	D	SD
1	A farmer should work aiming high yield and economic profit					

2	A farmer should try innovative farming idea which can help him to earn more					
3	A farmer should focus on growing cash crops instead of food crops for getting more income					
4	Success behind a farmer lies in producing more output with less cost of cultivation					
5	No matter whether the produce is saturated with chemicals, a farmer should only think about money(N)					

21.Risk orientation

Sl. No.	Statements	SA	A	N	D	SD
1	A farmer should practice intercropping in order to averse risk due to sudden natural disasters					
2	It is better not to try new farming practices unless majority of my neighbouring farmers gained benefit from practising it(N)					
3	One who is willing to take greater risks than an average farmer usually have better financial condition					
4	A successful farmer is the one who take calculated risk					
5	A farmer should take more chance in making a big profit than to be content with smaller but less risky profit					

22.Achievement Motivation:

Sl. No.	**Statements**	**SA**	**Agree**	**Undecided**	**Disagree**	**SD**
1	Work should come first even if one cannot get proper rest in order to achieve goals					
2	It is better to be content with whatever little one has, than to be always struggling for more (N)					

3	No matter what I have done I always want to do more					
4	I would like to try hard at something really difficult even if I cannot do it					
5	The desire to achieve more makes man more successful					

23. Innovativeness

Sl. No.	**Statements**	**A**	**U**	**D**
1	I would choose the traditional way of doing things than to go with new methods(N)			
2	Since I'm not sure of success of new practices, I would like to wait till others adopt it			
3	I try to keep myself informed about improved farming practices and to adopt it as earlier as possible			
4	I would feel restless unless I try out an innovative method which I have come across			
5	I believe there are always newer and better ways of doing things			

24. Environmental orientation

Sl.No	Statement	Agree	Undecided	Disagree
1	Excessive and indiscriminate use of pesticides and chemical fertilizers poses threat to soil health and humans			
2	Soil pollution, air pollution, and water pollution are grave			

	issues that should be concerned by humans			
3	Traditional method of agriculture where only organic and FYM manures used is better than modern farming practices			
4	Chemical free agricultural produce is obtained by practicing organic agriculture			
5	Since it is leased in land, it's ok to exploit the land by use of excessive fertilizers(N)			

25.Attitude towards collective farming

Sl.No	Statements	Agree	Undecided	Disagree
1	Collective farming farming has made significant improvement in the economic condition of farmers			
2	Collective farming promotes mutual cooperation among farmers			
3	In reality no individual farmer is interested in Group Farming(N)			
4	Collective farming pools the labour resource such that an effective utilisation of human resource is achieved			
5	Collective farming is a boon to farmers that are facing land constraint			

27.Credit orientation

1. Do you think a farmer like you should borrow credit for agricultural purposes? Yes/No
2. There is nothing wrong in going for Agricultural loans A/D
3. Collective farming and institutional support from agencies helped to secure credit more easily A/D
4. It's ok to use agricultural credit for other purposes like marriage, education of children etc. in unavoidable situation A/D
5. Did You use the credit in the last two years for crop production? Yes/No

28. Scientific orientation:

Sl. No.	Statements	SA	A	U/N	D	SD
1	Scientific farming practices give better yield than traditional practices					
2	The traditional practices of farming is still the best one even today(N)					
3	Even an experienced farm woman should use improved scientific practices for more yield					
4	Though it takes a lot of time to for a farm woman to learn improved scientific production practices, it is worth of efforts					
5	Traditional methods of farming have to be changed in order to raise standard of living of farmers					

29. Status of Digital literacy

- Digital gadgets possessed-Smartphone/Computer/Laptop
- Internet speed - Good speed, Moderate speed, Poor
- Access to internet connection-Yes/No
- Technical help on use of device: Independently /With Help of Family and Friends
- Use of Mobile applications:

Social media	Frequency of use		
	Very Frequently	Occasionally	Rarely
Facebook			
Whatsapp			
Digital payment apps			
Youtube/Instagram			
Online shopping apps			

30. Situational variables- Lease land characteristics

JLG	Rent amount paid by Lessee (Per Acre) Amount (Rs) Below 25,000 25,000 -50,000 Above 50,000 Specify Amount-----------	Whether soil is tested? Yes/No	Type of land before leasing (1= Being Fallow 2= Cultivable land	Size of leased in land 1=Marginal (Less than 1 ha) 2=Small (1-2 Ha) 3=Semi medium (2-4 Ha) 4=Medium (4-10 Ha) 5=Large (Above10 Ha)	Leasing history Leased in from Same person= 1 Leased in from different person=2	Mode of rent payment 1=Kind 2=Both Kind &Cash
1						
2						
3						
4						
5						

PART II

Assessing livelihood security index (LSI)

1) Food Security:

a. Extent of food availability
b. Extent of food affordability
c. Extent of food quality
d. Extent of food accessibility

What extent the following statements are true in your case?

Sl. No.	Statements	Always True	Often True	Occasionally True	Rarely True	Not True
1	Food in any kind is available to us throughout the year					
2	The quality of food available is good					
3	A nutritious food to my family is affordable with the household income					
4	I can meet almost half of the food requirements from the farm itself					
5	I have sufficient stock of food grains for future					
6	I'm satisfied with the government intervention for food delivery and distribution (PDS)					
7	I have daily servings of vegetables in my diet					
8	The food items like Cereals, Pulses, Fats and oils, Vegetables, Fruits and Foods of animal origin are available in sufficient quantity in the household					
9	Whether at any time in the last 12 months did you experienced anxiety over the lack of resources to meet basic food needs?					
10	In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?					

2)Economic Security:

a. Employment status
b. Total annual income and sources
c. Savings
d. Indebtedness
e. Insurance

Respond to the following statements:

Always True	Often True	Occasionally True	Rarely True	Not True

1.I/My Family members having employment throughout the year

2. I'm satisfied with the present working environment

3. I /My Family have savings and are beneficiaries of life Insurance policy

4. I/My Family have indebtness

5. My Family's income is adequate to meet the family expenditure

6. I/My family are enjoying the benefits of pension or any other allowances of Government

7. I'm having Kisan Credit Card

8. Mention total annual income & sources:……

3)Agricultural resource security:

a. Land holding
b. Market access
c. Irrigation source
d. Labour availability

Always True	Often True	Occasionally True	Rarely True	Not True

Adequacy of agricultural production:

1. The yield of agricultural produce is adequate to meet the cost of cultivation
2. Agricultural operations are facing labour shortage
3. Irrigation source in the field is having adequate supply of water
4. Cropping pattern like intercropping and multiple cropping followed in farm is having an impact on risk mitigation
5. Land is not adequate in terms of area and fertility for a bumper yield
6. The price of agricultural produce is not fair in the market

4)Health Security:

a. Extent of availability of health facilities
b. Extent of affordability of health facilities
c. Health status of family
d. Extent of accessibility of health facilities

Kindly give response to the following the statements:

Sl.No.	Statements	**Always True**	**Often True**	**Occasionally True**	**Rarely True**	**Not True**
1	I depend on Village level hospital (PHC) for health facilities					
2	I'm getting medical facilities and transport means in case of emergencies					
3	The available health care facilities are affordable to my family					
4	I/My Family were affected with Covid -19 Pandemic					
5	I'm satisfied with health care facilities of					

	my district					
6	I am enjoying the benefits of health insurance					
7	Incidence of epidemic and lifestyle diseases in last 3 years					

5)Social Security:

a. Trust and solidarity
b. Social participation
c. Family education status

Kindly mention the following statements with (A/U/DA)

Sl. No.	Items	A	N	DA
1	I participate actively in the social activities like campaign, and other socio- cultural programmes			
2	I'm an active member in the social organizations			
3	My Children Enjoys quality education in better institutions			
4	The agricultural produce in the field is not stolen by others			
5	The money I lend is promptly returned by the borrower.			
6	The community recognize me and I feel proud to be a part of society			
7	Family education status is medium			

Perceived Impact on the livelihood security of women farmers

A. Perceived Impact on Economic security

1. Improvement in employment generation through lease land farming

2. Lease land farming through women collectives has helped to overcome the high transaction costs that individual farmers face

3. Savings on hired labour through substituting self-labour

4. Effective use of leisure time for productive purpose

5. Lease land farming has improved household income.

B. Perceived Impact on Social security

1. Improved the skills to maintain and widen social networks

2. Perception on improvement of social status and social inclusion

3. Improvement in participation in social organizations

4. Better opportunities for capacity building programmes

5. Improved access to the services of developmental agencies and cooperatives

C. Perceived Impact on Agricultural Security

1. Strengthening of buying, selling linkages and negotiating power through collective marketing

2. Increase in area of cultivable land through conversion of fallow land

3. Regular supply of agricultural produce by proper planning and management of group members

4. Value addition of agricultural produce in glut seasons due to collective action

5. Increase in the total area under cultivation and production due to pooling of land resources

D. Perceived Impact on Food and Nutritional security

1. Ensured the availability of more nutritious food for consumption

2. Enabled the women farmers to provide children with balanced diet

3. Households became more economically stable to afford quality food

4. Adequate and consistent accessibility to diverse diet

5. Enhancement in the food and nutritional security status of the household

E. Perceived Impact on Health security

1. Enabled farmers to feed the families with safe and nutritious food which improved the health status of households

2. Engagement of farmers in agricultural activities has helped them maintaining physical and mental fitness

3. Reduction in stress through engaging in farm activities and availability of financial and social support

4. Perception on decrease in the occurrence of life style diseases

5. Reducing the drudgery of individual farm operations due to sharing of work and small-scale mechanization

Details about the JLG group

- Name of the JLG Group:
- Year of starting:
- No. of members:
- Address of JLG group:
- Agency/Department to which women collectives are attached
- Details about the members

Sl. No.	Members-Name	Main occupation

- Annual income from Women collective:
- Initial capital of SHG:
- Reason for taking membership:
  ……
- Source of Capital

  a) Owned capital: b) Borrowed capital

❖ Source:
Scheduled banks

Private banks
Private money lenders

- Name of the Bank:
- Credit amount:
- Rate of Interest:
- Time period of repayment:

Group Dynamics Effectiveness

A. Participation

Sl.No	Statements	SA	A	N	D	SD
1	All the group members are involved in the					
2	I participate actively in group meeting and other activities					
3	I feel that the members are not interested and enthusiastic to					
4	I feel that the members are verbally and physically active in all group					
6	Team members strive to make it possible for everyone to participate fully in the group					
7	I remain silent and aloof in group					
8	There is adequate group attendance while conducting meetings					

B Team work

Sl. No	Statements	SA	A	N	D	SD
1.	Members strive to maintain group cohesiveness while attaining the goals.					
2.	The group is working as a team in all					
3.	There are some people in my group who believe they are entitled to all of the credit for the Group's					
4	I feel that the combined effort of the group brought success					
5.	I prefer to work alone without the help of group members					
6.	All the members are responsible enough to keep the group on target					
7.	All the members are willing to give the major credit of group success to the					
8.	The returns are equally distributed among all					

C.Group atmosphere

Sl.No	Statements	SA	A	N	D	SD
1.	I prefer a friendly and congenial atmosphere in my					
2.	Everyone is giving freedom to others to express their ideas					
3.	I feel that the environment is not at all comfortable for the slow, shy people to come out and participate in					
4.	All members are given a sense of warm and friendly acceptance by others					
5.	I feel sometimes my group members are indifferent and hostile towards me					
6.	I observe some members are annoying and provoking others					

D. Decision making procedures

Sl.No	Statements	SA	A	N	D	SD
1	The group makes the decision concerning the group without the topic drifting					
2	I did not support other members decision in consensus					
3	I feel like majorities decision is valid in the SHG					
4	I feel that the other members never seek my opinion in group decision					
5	Usually, any group decision is taken jointly by all members in a participative manner					
6	The leader attempts to get full participation of the members while taking decision					
7	I usually prefer to take my decision, whether personal or concerning the groups, all by myself					
8	I feel that the group takes high quality decisions at all times					

E. Group cohesiveness

Sl.No	Statements	SA	A	N	D	SD
1	I feel that the group worked well because the members are attached to one another emotionally					
2	I feel dissatisfied and would like to quit the group at the earliest					
3	Members run to support each other during hardships					
4	Members of the group do not rely on one another to complete group tasks					
5	There is unhealthy criticism and competition among the members					
6	Some members, I believe, do not recognise my contribution to the group's success					

F. Group Leadership

Sl.No	Statements	SA	A	N	D	SD
1	The group leader is efficient at group work					
2	The group leader is sympathetic and helpful to other members in solving the problems at work and personal life					
3	The group leader is lazy and leaves all work to group member					
4	The leader maintains positive relationships with both members and other groups					
5	The group leader works much for the groups success					

6	Group leader is less approachable and reliable					

G. Interpersonal trust

Sr.No	Statements	SA	A	N	D	SD
1	I find it hard to accept and support the views and decision of the majority					
2	When I share and give suggestions I feel that some do not believe in me at all					
3	Exchanging ideas and feelings with team members is difficult					
4	Others have good opinion about my capability to work for the group					
5	I feel confident in taking any task if there is group support					
6	There is much misunderstanding among group members due to lack of faith					

H. Task Functions

Sl.No	Roles	Always (2)	Sometimes (1)	Never (0)
1	Initiating activity :(proposing solutions, suggesting new ideas, new definitions of the problem or new			
2	Seeking information (asking for clarification of suggestions, requesting additional information or facts)			
3	Seeking opinion: (looking for an expression or feeling about something from the members, seeking clarification of values, suggestions or ideas)			
4	Giving information (offering facts or generalizations, relating ones own experience to group problems to illustrate			
5	Giving opinion (Stating an opinion or belief concerning a suggestion or one of several suggestions)			
6	Elaborating (Clarifying, giving examples or developing meanings, trying to envisage how a proposal might work out if adopting)			
7	Coordinating (Showing relationship among various ideas or suggestions, trying to pull ideas and suggestion to get her, trying to			
8	Summarizing :(Pulling together related ideas or suggestions, relating suggestions			
9	Testing feasibility (Making application of suggestion to real situation, examining practicability and workability of ideas, prevailing decision)			

I. Achievement of SHG

A	At SHG level			
Sl.No	Statements	True (2)	Sometimes True (1)	Not True (0)
1	The group has represented and voiced against atrocities on woman			
2	The group has actively participated in community asset generation			
3	The group women are empowered socially and economically after forming into SHGs			
4	The group has put in a lot of efforts to raise the financial status of its members			
5	The SHG has adopted Novel agricultural technologies to produce better quality produce			
6	The group also takes interest to solve personal problems of members			
7	The group has taken lead in organizing religious, cultural and social activities in the village			
8	The group has participated in work shops, exhibitions, fairs, etc.			
B	At member level			
Sl.No	Statements	True	Sometimes True	Not True
1	I undertake the group activities as planned			
2	I try to obtain all relevant information with regard to production and marketing from different sources			
3	I have participated in the trainings organized to upgrade my skills			
4	I always put my skills into practice and have shared them with other members			

5	I actively participated in exhibitions, fairs, And other market linkages to market my group produce			

Challenges faced by collective farming women

Sl.No	Statements	MS	S	LS	Remarks
Lease land Related constraints					
1	Lack of interest of big landowners to give their fallow land for lease land farming				
2	Mostly lease contracts are verbal in nature				
3	High Lease land rent				
4	Disputes between lessor and lessee due to land document issue				
5	Owners demand payment of rent before cropping season				
6	Difficulty to pay rent as cash				
7	Written agreements lack proper legal structure				
8	Non legalised lease rent				
9	Tenancy tenures require yearly renewal which is a cumbersome procedure				
10	Short term nature of tenancy tenure				
11	Lack of proper irrigation sources in leased in land				
12	Little interest on lessor's side to invest on land improvement				
13	Lessee can't cultivate perennial crops even if it is more profitable				
14	Poor fertility status of leased in land				
Group Constraints					
15	Lack of unrest among group members				

16	Political interventions on group actions				
17	Formation of cliques that adversely affect group activities				
18	Lack of cohesion among members				
19	Group pressure to adopt certain practices which are not particularly suited to the area				
Personal constraints of women farmers					
20	Lack of time due to domestic chores of women				
21	Lack of support from family members				
22	Gender discrimination faced by women in various facets				
Knowledge constraints					
23	Lack of technical knowledge				
24	Lack of knowledge about plant protection chemicals				
25	Poor adoption of scientific cultivation practices				
26	Lack of skill in maintenance of proper records				
27	Lack of knowledge on organic farming				
Constraints in Supplies and Services					
28	Non availability of skilled labourers at the peak time of agricultural operations				
29	Delay in getting agricultural inputs				
30	Problems in marketing of agricultural produce				
31	Nonavailability of farm machinery and implements				
32	Lack of timely and sufficient credit facilities from banks				
33	Lack of proper marketing facilities				

34	Lack of processing and storage facilities				
35	Problems due to labour accidents/injuries				
36	Shortage of good quality seeds, fertilizers, plant protection chemicals				
37	Distress due to market fluctuation				
38	Moneylenders are the easily accessible credit source for which they impose high interest rate				
39	Lack of timely training programmes offered by Departments				
40	Scarcity of labour				
41	High labour charges				
42	Shortage in availability of leased in land				
43	Difficult bank loan procedure				
44	Inadequate extension service				
	Others				

Suggestions to improve the collective farming:

APPENDIX II

INTERVIEW SCHEDULE FOR THE FACILITATORS

PART A

(Profile of the facilitators)

1. Name
2. Name of the Block and Panchayat:
3. Age:
4. Academic qualification:
5. Designation:

PART B

Perception of facilitators on impact of lease land farming on livelihood of women farmers

Please indicate your agreement or disagreement to the following statement

SA- Strongly agree, A- Agree, UD- Undecided, DA- Disagree, SDA- Strongly disagree

Sl. No.	Statement	SA	A	UD	DA	SDA
1.	Food security of the households has improved after women farmers has started actively participating in Collective farming					
2	Sufficient quantity of food is available for those households in which women has been engaged in collective farming					
3	Income from collective farming created more savings in households					
4	Collective farming increased the standard of living of women					
5	Collective farming generated employment for women and they are able to repay credit on time					
6	Lease land farming utilized the fallow land for agriculture thus ensuring agriculture security					
7	Group farming improved the health security of households by providing nutritious diet					

8	Social participation of women increased after performing collective farming					
9	Stability of group is determined by the homogeneity of members in economic and social condition					
10	There is full potential for upgrading Sustainable livelihood through Lease land farming of women collectives					

LEASE LAND FARMING FOR SUSTAINABLE LIVELIHOOD BY WOMEN COLLECTIVES IN THRISSUR DISTRICT

By
SWAPNA THOMAS
(2020-11-077)

THESIS

Submitted in partial fulfillment of the requirement for the degree of

Master of Science in Agriculture

Faculty of Agriculture

Kerala Agricultural University, Thrissur

DEPARTMENT OF AGRICULTURAL EXTENSION EDUCATION

COLLEGE OF AGRICULTURE

VELLANIKKARA, THRISSUR-680656

KERALA, INDIA

2023

ABSTRACT

Land is considered as the most valuable fixed asset in all economies and more so in agrarian and developing economies like India where it holds a symbol of both status and sustenance. The average size of operational land holding in India has been reduced very drastically over the years from 2.28 Ha in the 1970-71 to 1.08 Ha in 2015-16 (GOI,2016). The scenario in Kerala is also similar and average operational landholding is 0.18 Ha (Economic review,2021). The land crisis in the agrarian sector is leading to rising number of small and marginal farmers. Kerala, being a consumer state has to depend on its neighbours for food imports. In Kerala, leasing of land is permitted for members of SHGs for improving the livelihood and earnings of the farm families.

Collective farming by women is an initiative introduced by *Kudumbashree* to encourage cultivation among neighbourhood groups. It not only contributes significant changes in the lives of the poor but also helps to increase agricultural production by bringing fallow and cultivable waste land into agricultural use.

The study was undertaken to examine the impact of lease land farming on livelihood security of women farmers. Profile characteristics of women farmers and their influence on group dynamics were analysed. Factors affecting lease land farming and the challenges faced by women collectives were also explored.

The present study was conducted in Thrissur district. Ex post facto research design was used. Two blocks were randomly selected where each block representing more area under banana and vegetable cultivation in leased land. From these selected blocks of Kodakara and Ollukkara, two panchayats each were randomly selected. From Kodakara block, Mattathur and Kodakara, whereas from Ollukkara block, Nadathara and Puthur panchayats respectively. From these two blocks, fifteen women joint liability groups were selected randomly, comprising 60 women farmers each who cultivate banana and vegetables under leased land. Thus, the total sample comprised of 120 women farmers. Another respondents of 30 facilitators were also randomly selected. Thus, the total sample included 150 respondents comprising 120 women farmers and 30 facilitators. The data were collected with the help of a semi structured pre tested interview schedule.

Perceived impact of lease land farming of women farmers showed that 49.17 per cent were under medium followed by 28.33 per cent under high and 22.5 per cent in low categories. This indicated that women farmers were of the opinion that lease land farming had a positive impact on their livelihood security. Regarding facilitators 26.67 percent belonged to medium category while 36.67 percent each were under low and high categories of perceived impact. Comparison of perceived impact score employing Mann Whitney U test revealed that there was a significant difference among banana and vegetable farmers at 0.05 level.

The Livelihood Security Index (LSI) developed by Argade (2014) was used with modifications to compute livelihood security of the farmers. Livelihood security analysis showed that 40% of both banana and vegetable farmers possessed medium level. Comparison of LSI of vegetable and banana farmers was done using independent sample t test and it showed that there was significant difference among the respondent categories where the mean index of banana farmers (0.70) was higher than vegetable farmers (0.47).

The group dynamics among the JLG members were assessed using the group dynamics effectiveness index (GDEI). Regarding group dynamics effectiveness index, 46.67% of respondents were under medium category followed by 29.17% and 24.17% under high and low categories respectively. Comparison of group dynamics effectiveness index (GDEI) of vegetable and banana farmers showed that there was significant difference among the respondent categories where the mean index of vegetable farmers (57.84) being higher.Spearman's rank correlation between group dynamics effectiveness index and profile characteristics of women farmers revealed that age, education, annual income, trainings received , occupation, social participation, extension agency contact and innovativeness were having positive significant relationship.

With respect to the factors affecting lease land farming, binary logistic regression revealed that group dynamics effectiveness, economic motivation, social participation, extension agency contact, and achievement motivation were significant.

Garret ranking was employed to explore the challenges faced by women collectives and were categorised under four aspects ie, lease land related, group related, technical and supplies and services. Among lease land related challenges, non-legalized

status was ranked as most serious challenge. With regard to group related challenges, absenteeism of members was ranked first. Improper maintenance of records on farm expenses and price fluctuations were identified under technical and supply challenges respectively.

In a nutshell, the lease land farming of women collectives has augmented livelihood security of women farmers. It is suggested that policy for legalization of land leasing for agricultural purpose should be reformed so as to promote fallow land farming.

Plate 1. Focus group discussion at Ollukkara block with women collectives

Plate 2. Focus group discussion at Kodakara block with women collectives

Plate 3. *Kripasree* JLG in the Kodakara block

Plate 4. *Pushpita* JLG in the Kodakara block

Plate 5. *Annapurna* JLG in the Ollukkara block

Plate 6. *Harithagramam* JLG in the Ollukkara block