

**ORGANIC FARMING AS A STRATEGY FOR CLIMATE CHANGE
ADAPTATION – AN EXPLORATORY STUDY**

by

SANGEETHA.K.G.

(2011 – 21 - 107)

THESIS

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2018

DECLARATION

I, hereby declare that this thesis entitled “**ORGANIC FARMING AS A STRATEGY FOR CLIMATE CHANGE ADAPTATION – AN EXPLORATORY STUDY**” is a bonafide record of research work done by me during the course of research and the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other University or Society.

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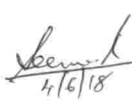
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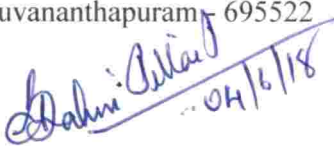
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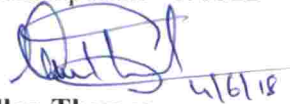
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LIST OF ABBREVIATIONS

ADB	-	Asian Development Bank
FAO	-	Food and Agriculture Organisation
FiBL	-	<i>Forschungs institut für Biologischen Landbau</i> (Research Institute of Organic Agriculture)
FTAK	-	Fair Trade Alliance of Kerala
ICAR	-	Indian Council of Agricultural Research
ICT	-	Information Communication and Technology
IFFCO	-	Indian Farmers Fertiliser Cooperative Limited
IFOAM	-	International Federation of Organic Agriculture Movements
IPCC	-	Intergovernmental Panel on Climate Change
INDOCERT	-	Indian Organic Certification Agency
ITK	-	Indigenous Technical Knowledge
KAU		Kerala Agricultural University
NGO	-	Non-Governmental Organization
NPOP	-	National Programme on Organic Production
SAPCC	-	Kerala State Action Plan on Climate Change
UN	-	United Nations
UNFCCC	-	United Nations Framework Convention on Climate Change
USGCRP	-	United States Global Change Research Program
VFPC	-	Vegetable and Fruit Promotion Council of India.

INTRODUCTION

1. INTRODUCTION

Climate change has been globally recognised as an ever increasing threat to our planet that is becoming impossible to ignore (Sarkar and Padaria, 2015).

Climate change is considered as the greatest challenge facing by human beings and other organisms in the world today and the generations to come. Extreme climatic events and weather abnormalities experiencing all over the world proved that climate change is a reality. According to Intergovernmental Panel on Climate Change (IPCC), the international body for the appraisal of climate change, earth's average surface air temperature could rise up to 0.69 degrees Celsius by 2030, 1.8 degrees Celsius by 2065 and as high as 6.4 degrees Celsius by 2099 (IPCC, 2014). In spite of providing wide spread awareness on climate change, the rising of green house gases emissions in the atmosphere is continuing at an alarming rate.

The increase in temperature, uneven weather pattern and extreme climatic events are not only affecting people's routine life, but also disturbing sustainability of farming. Various studies conducted by the Indian Council of Agricultural Research (ICAR) projected that there will be variability in temperature and rainfall pattern with significant impacts on crop yields (ICAR, 2013). As farming is highly dependent on climate and weather patterns, the variations in climate is adversely affecting farming activities to a larger extent. Altieri and Koohafkan (2008) said that poor farmers in developing countries are particularly vulnerable to the impact of climate change because of their geographic exposure, low income and greater dependence on farming as well as lack of alternative livelihoods.

Even though agriculture is a major contributor to climate change (17 - 32 per cent of human-induced GHG emissions), when done sustainably, it can be also be helpful to mitigate and adapt with climate change (Amiraslany, 2010; FAO, 2011 and Semedo, 2016). By tapping into the multitude of

climate-friendly farming practices, agriculture can provide food for the world's population, as well as be a source of livelihood sustenance for the people (Reynolds and Nierenberg, 2012).

There are many studies supporting that organic farming can be useful for climate change adaptation. Roychowdhury *et al.* (2013), reported that the negative effects of global climatic changes on the environment are manifested through soil erosion, water shortages, salination, soil contamination, genetic erosion, etc. and organic farming is the best alternative to avoid the ill effects of chemical farming. Organic farming can contribute to the reduction of greenhouse gas emissions, while bringing other benefits like: improved system resilience to the effects of climate change, improving biodiversity on farmland, conserving soil fertility, reducing eutrophication and water pollution, retaining the health of the soil by prohibiting the use of synthetic inputs, reducing environmental impacts, improving food security and farmers' sovereignty (Halweil, 2006; IFOAM, 2009; Padel, 2013; Mullar *et al.* 2016; Guar, 2016 and Maitra and Zaman 2017).

According to Paull (2011), organic farming is the fastest growing agriculture based industry in the world and the land devoted to organic agriculture worldwide has increased over the past decade from 15.8 million hectares to 37.2 million hectares exhibiting a compounding rate of growth of 8.9 percent per annum. In 2015, the data on organic agriculture from 179 countries with 50.9 million hectares of land under organic cultivation was available worldwide as per the survey report by FiBL (*Forschungsinstitut für biologischen Landbau* - The Research Institute of Organic Agriculture). Organic food and drink sales have increased from roughly 18 billion US dollars to almost 82 billion US dollars over 15 years (Willer and Lernoud, 2017). The area under organic certification (including wild harvest) in India increased by 9.9 Lakh ha during 2015-16 and reached 5.71 million ha from 4.7 million ha in 2013-14 (Guar, 2016).

In Kerala, recent years have witnessed stagnation in the growth of the agricultural sector due to extreme weather conditions like drought and other climatic variability (Economic review, 2016). As Gopakumar (2011), rightly pointed out, since Kerala state has low base in food production and facing serious challenges in retaining the meagre area, proper adaptation strategies need to be developed in the event of projected temperature rise for sustaining agricultural production. Phi (2011) opined that good adaptive capacity supports both resilience and transformative capacity, which together determine the sustainability of socio-ecological systems. Varghese (2012) stated that research interventions in developing a sustainable cropping pattern and scientific validation with location specific studies on the impact of climate change are highly essential.

1.1. STATEMENT OF THE PROBLEM

Following are the specific problems identified by the researcher after extensive literature investigation and discussion with experts:

- (i) As climate change is creating serious challenges to the farmers for successful crop production, farming practices suitable for coping with these changing climatic patterns are gaining attention. The indiscriminate use of chemicals in farming had led to increased levels of GHG emissions, making agriculture as one of the major contributors of climate change. So it is the need of the hour to identify the farming practices most suitable for making our farming systems more resilient to changing climatic variability.
- (ii) Even though there are several studies relating to organic farming and climate change adaptation at international level, the number of studies in this direction at local level is very less.

- (iii) For understanding the integrated adaptive capacity, it is needed to quantify and for that proper measurement procedure is lacking at local level.
- (iv) In order to get the details of organic farmers, for various purposes, it is needed to have an inventory of certified organic farmers.
- (v) Also, there exists lacuna of proper adaptation strategies for guiding the farmers as well as the stakeholders to face the difficulties related climate change.

In this context, the present study entitled ‘Organic farming as a strategy for climate change adaptation – An exploratory study’ was taken up with the following objectives:

1.2. OBJECTIVES OF THE STUDY

2. To prepare an inventory of certified organic farmers of Kerala.
3. To analyse the integrated adaptive capacity of the organic farmers in comparison with conventional farmers through development of - Integrated Adaptive Capacity Index.
4. To explore the personal, socio-economic and psychological characteristics of the selected farmers and the agro-ecological characteristics of their farms and
5. To formulate a workable climate change adaptation strategy.

1.3. SCOPE AND IMPORTANCE OF THE STUDY

Scientific research is needed to determine which agricultural techniques, practices and systems will contribute to climate change adaptation. Since, agriculture is a major sector to fight against climate change, it is highly essential to promote more research, attention and investment on agricultural practices that mitigate or adapt to climate change.

The State Action Plan on Climate Change (SAPCC) reported that Kerala is severely threatened by climate change. The projected climate change scenario estimates that the atmospheric temperature across Kerala will rise by 2 degrees Celsius by the year 2050. The minimum surface temperature in the Western Ghats region may rise by 2 to 4.5 degrees Celsius. The number of rainy days is likely to decrease along the entire western coast including the Western Ghats. Also, it is projected that if the sea level rises by one metre, 169 sq km of the coastal region surrounding Kochi would be inundated (SAPCC, 2014).

Hill (2014) reported that Kerala is going back to her traditional organic farming after hundreds of farmers had faced the bitter consequences of chemical farming and mono cropping practiced as scientific agriculture. The Department of Agriculture is now promoting the production of organic food by launching “Jaiva Kerala”. Rajasekharan and Bhaskaran (2016) urged that the agricultural sector in Kerala needs to be revitalised in tune with the emerging challenges at the national and global levels to ensure livelihood security to farm families. Organic farming policy, strategy and detailed action plan for Kerala was declared during the year 2010 and the Dept. of Agriculture is implementing a comprehensive project on organic farming in Kasaragod district. Pathak, *et al.* (2012), stated that simple, economically viable and culturally acceptable adaptation strategies have to be developed and implemented.

Thus, the present study, exploring the integrated climate change adaptive capacity of organic farming in comparison with conventional farming, is significantly important and needed. The practices which help the farmers for adapting to climate change identified through the study can have potential to be replicated, modified and scaled up further for application on larger farms, helping to improve water availability, increase diversity and improve soil quality, as well as to mitigate climate change. The measurement tool, Integrated Adaptive Capacity Index, developed through the study, can be

utilized for other related researches. Further, the inventory of certified organic farms will be helpful as a database which can contribute for the studies and projects on organic farming. The climate change adaptation strategy developed through the study will be helpful in programming developmental policies and projects contributing to the sustainable crop production in Kerala. Therefore the present study, exploring the potential of organic farming as a strategy for climate change adaptation is highly relevant in the current scenario.

1.4. LIMITATIONS OF THE STUDY

The present study is a part of doctoral research programme, hence, it has all the limitations of time, finance, mobility, resources and challenges. The study was restricted to four selected Agro- Ecological Units (AEU) of Kerala and therefore the findings may be generalised only after undertaking replicated investigations in the same units as well as continuous research analysis in other AEUs. Interview method has been adopted for data collection and the opinion of the respondents may vary at a different time or place. In spite of these limitations, every effort has been taken by the researcher to carry out the study as systematic as possible.

1.5. PRESENTATION OF THE THESIS

The entire thesis is presented in five chapters: The first chapter, *Introduction* explains the importance of the topic, objectives, scope and limitation of the study. Second chapter, *Theoretical Orientation* deals with review of relevant literature in line with the objectives of the study. Third chapter, *Methodology* describes the sampling design, the study area, measurement of independent and dependent variables, data collection procedure and statistical tools used. Fourth chapter, *Results and discussion* encompasses the results of the study to draw specific inferences and the final chapter, *Summary* is the brief summing up of the work done and salient findings, with the implications based on the results of the study and future areas of research.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

Review of literature is an integral part of research, for giving an overview of the past studies on the research topic, guiding the researcher on the reasons behind selecting the research question and ideas for interpreting the results. An in depth analysis of previous research works related to the present study is included in this chapter.

The chapter is organised under the following heads:

2.1. Concept of climate change

2.1.1. Climate change scenario in India

2.1.2. Climate change scenario in Kerala

2.2. Concept of variables and their review

2.2.1. Dependent variable

2.2.2. Independent variables

2.3. Concept of inventorisation of certified organic farmers

2.4. Review of research studies in relation to organic farming and climate change adaptation

2.5. Constraints faced by the farmers in relation to climate change adaptation

2.6. Concept of strategies for climate change adaptation

2.1. Concept of Climate change

Climate change is defined as any change in the average daily weather pattern over an extended period of time (typically decades or longer) whether due to natural variability or as a result of human activity, is happening now,

and is already affecting many natural systems around the world. The consequences of climate change can be seen all over the world and these impacts are predicted to be intensified in the coming years (IPCC, 2007a).

According to United Nations Framework Convention on Climate Change, UNFCCC (1992), climate change refers to a change which is attributed directly or indirectly to human activities that alter the composition of the global atmosphere and which are in addition to natural climate variability observed over comparable time periods.

Kaiser and Drennen (1993) reported that climate change not only will have an effect on the productivity of agricultural products but also the economic consequences on farm profitability, agricultural supply and demand, trade, price and so on.

Many reports and studies revealed that climate change is a threat to agriculture and food security as extreme weather events result in significant yield reductions, crop failures, degradation of soil, triggering of pests and diseases, proliferation of weeds, reduction of water availability, heat stress, increased evapo-transpiration, increase in disease and mortality rate of livestock, etc. (Lal *et al.*, 1998; Parry *et al.*, 1999, IPCC, 2001; Akpodiaga and Odjugo 2010; FAO, 2011; ADB, 2012; Adeola, 2014; Vani and Kumar, 2016).

Climate change is operating within the context of continuous regional adjustment and adaptation to the multiple stressors that are affecting individuals, society, economies, landscapes, policies, etc. (Reid and Vogel, 2006).

Radhakrishnan (2010) opined that climate change is a 'stress multiplier' when combined with resource scarcity, unemployment, deprivation or statelessness and can prove to be a potential destabilizing force.

Gopakumar (2011) stated that uncertainties in the onset of monsoon, weak monsoon flow and long spells of break are serious issues as far as the

Indian agriculture is concerned. With agriculture's dependence on optimal temperature and water availability, climate change has been and will continue to be a critical factor affecting the productivity of different activities within the sector (Lasco *et al.*, 2011).

Global warming, climate change, rapidly increasing population, depletion of natural habitats and resources are important global challenges having direct impacts on livelihoods and raising concerns for food security, water supply, health and energy (Rathore *et al.*, 2013).

Climate change has the potential to affect all natural systems and threatening sustainable livelihoods, environmental management, rural and socio-economic development, across the globe (Muhumuza *et al.*, 2011; Oduniyi, 2013, SAPCC, 2014). During the last several decades, increased temperatures heavy rainfall, floods, longer and more intense droughts have led to reduced crop yield levels and disruptions in agricultural production, especially in the most vulnerable and least prepared countries (Adeola, 2014).

Sarakar and Padaria (2015) reported that apple production in Himachal Pradesh has decreased between 1982 and 2005 as the increase in maximum temperature has led to a reduction in total chilling hours in the region and the changes in the time and intensity of snowfall in the Himalayan ecosystem is affecting the production and productivity of temperate fruits and vegetables.

Simpson (2016) said that many of the small farm families in the tropics are already in struggle against poverty, degraded land and rainfall that vary from year to year.

As per FAO (2015), the percentage share of damage and loss to agriculture by hazard type from 2003 to 2013, indicated that the overall droughts and floods together caused 74% of total damage and losses on agriculture (Figure 1). The impact of drought on Indian food grain production from 1950-51 to 2006-'07 is shown in Figure 2. It could be seen that whenever there was drought, the food grain production had been adversely affected.

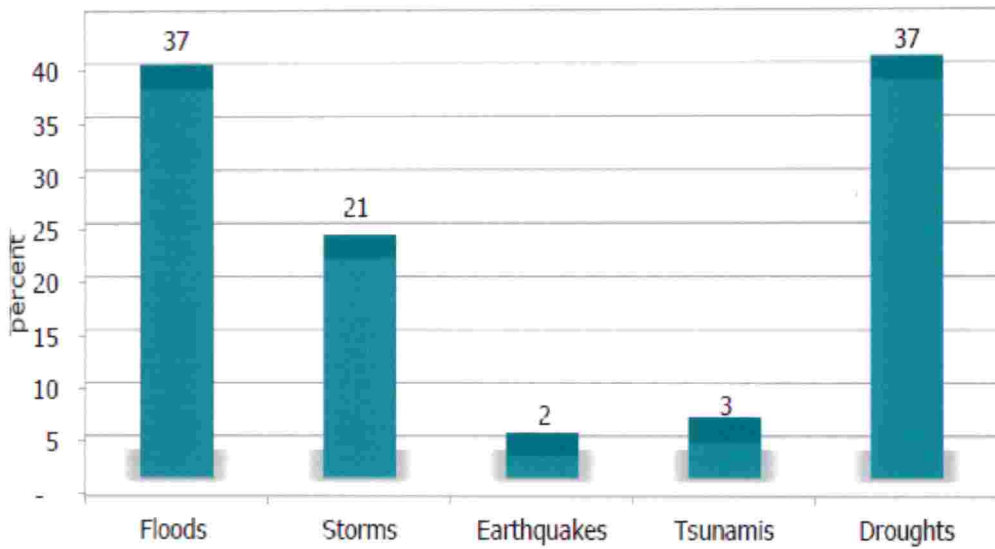


Fig. 1. Percentage share of damage and loss to agriculture by hazard type for the period from 2003 to 2013 (Source: FAO, 2015)

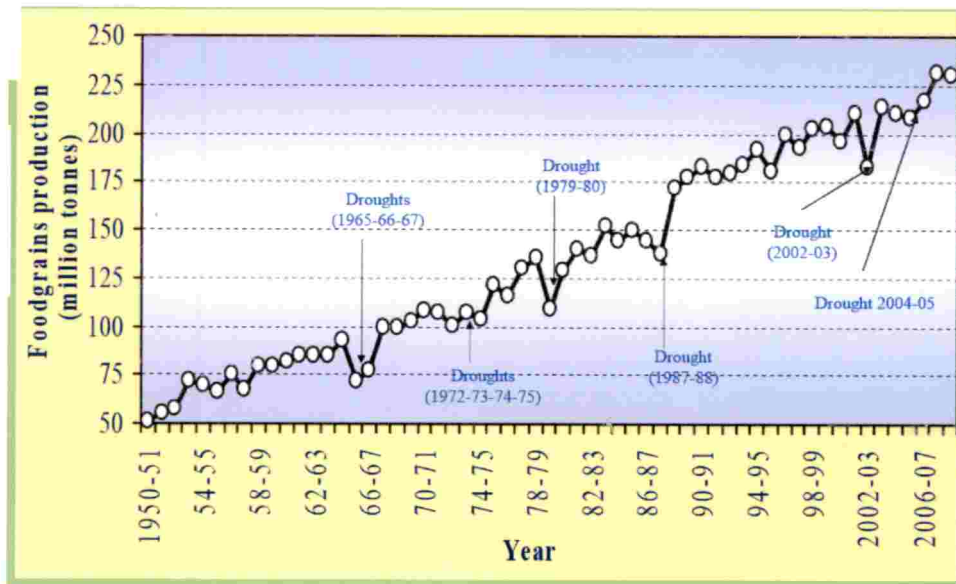


Fig. 2. Impact of drought on Indian food grain production from 1950-51 to 2006-'07 (Source: Indian Meteorological Department)

Changing climate patterns have already caused considerable impact on crop growing conditions, sustainable agricultural production, food security and socioeconomic wellbeing in many regions. Hence, it can be concluded that climate change is the greatest ecological, economic and social challenge, affecting a wide range of people and areas all over the world.

2.1.1. Climate change scenario in India

A marked increase in rainfall and temperature is projected in India during the current century. It is expected that the area averaged mean annual surface air temperature is likely to increase over the land regions of the Indian sub continent between 3.5°C and 5.5°C by 2080s. In the case of rainfall, a marginal increase of 7 to 10 per cent in annual rainfall is projected over the sub continent by the year 2080 (Rao, 2011).

Under the projected climate change scenario, uncertainties in the onset of monsoon, weak monsoon flow and long spells of break are serious issues as far as the Indian agriculture is concerned and the occurrences of extreme weather events like droughts, floods, heat and cold waves, hail storms, cloud bursts, etc. will again adversely affect the crops to a large extent (Gopakumar, 2011). Therefore, the food grains production is more vulnerable to climate variability.

As far as India is considered, the country is highly vulnerable to climate change because of high physical exposure to climate related disasters (65% is drought prone, 12% is flood prone and 8% susceptible to cyclones) as well as India's economy and population mainly depend on climate sensitive sectors like agriculture, forests, tourism and fisheries (Viswanathan, 2015).

2.1.2. Climate change scenario in Kerala

The demographic, socio-economic and physiographic situations in Kerala determine the specific vulnerabilities of economies towards climate change and it is imperative to work on the precautionary and anticipatory

measures for facing the expected changes and adapting to the changes in the long term. Acute water scarcity, frequent spread of vector and water borne diseases, severe forest and biodiversity degradation, decrease in the agricultural production etc. are some common issues which may become severe and relevant in the future (SAPCC, 2014).

2.1.2.1. Climate

The state of Kerala is located in the humid tropics, lies on the south western coastal region of India. The climate of Kerala is tropical monsoon with seasonal rainfall and hot summer. The annual precipitation varies between 100 cm to 500 cm, with a state average of about 300 cm. Due to the steep topography, a major portion of the rainfall received is worn out to sea very fast (within 48 hours). Winds over the state are seasonal with diurnal variation due to maritime influence. The state is extremely humid due to the existence of Arabian Sea in the west. Annual relative humidity varies between 79 – 80 per cent in the morning and 73 – 77 per cent in the evenings. Kerala is characterised by the resource richness such as rainfall, fertile soil, good sunshine and humidity. It also possesses different climatic conditions like tropic, sub tropic and semi-temperate (SAPCC, 2014; Directorate of Agriculture, 2016).

2.1.2.2. Rainfall

A decline in monsoon rainfall and an increase in post monsoon rainfall were the trends obtained for the State of Kerala as a whole with the cyclic trends of 40-60 years. A study conducted by Venkatesan *et al.* (2015) based on the rain fall departure analysis for 61 years (1951-2012) in Kerala revealed that there is decrease in annual rainfall and increase in drought condition and existing rainfall variability of rhythmic fluctuation cycle, approximately in every ten years.

Table. 1. Rainfall data of Kerala for the period 1951 to 2012

Year	Annual rainfall (mm)	Departure	% Departure	Drought Condition
1951	2705.6	-133.61	-4.71	0
1952	2334.8	-504.41	-17.77	0
1953	2544.8	-294.41	-10.37	0
1954	2937.9	98.69	3.48	0
1955	3134.6	295.39	10.40	0
1956	2798.3	-40.91	-1.44	0
1957	3103.2	263.99	9.3	0
1958	2923.1	83.89	2.95	0
1959	3746.2	906.99	31.95	0
1960	3385.6	546.39	19.24	0
1961	4257.9	1418.69	49.97	0
1962	3375.8	536.59	18.9	0
1963	2651	-188.21	-6.63	0
1964	2869.2	29.99	1.06	0
1965	2342.5	496.71	-17.49	0
1966	2621.8	-217.41	-7.66	0
1967	2569.1	-270.11	-9.51	0
1968	3392.7	553.49	19.49	0
1969	2664.9	553.49	19.49	0
1970	2703.3	-135.91	-4.79	0
1971	3076.7	237.49	8.36	0
1972	2739.2	-100.01	-3.52	0
1973	2412.4	-426.81	-15.03	0
1974	2767.5	-71.71	-2.53	0
1975	3498.4	659.19	23.22	0
1976	2068.8	-770.41	-27.13	Moderate
1977	3047.6	208.39	7.34	0
1978	3176.7	337.49	11.89	0
1979	2503.1	-336.11	-11.84	0
1980	2803.4	-35.81	-1.26	0
1981	3005.8	166.59	5.87	0
1982	2223.3	-615.91	-21.69	Mild
1983	2397	-442.21	-15.58	0
1984	2762.2	-77.01	-2.71	0

1985	2390.8	-448.41	-15.79	0
1986	2093.4	-745.81	-26.27	Moderate
1987	2137.6	-701.61	-24.71	Mild
1988	2403.4	-435.81	-15.35	0
1989	2422.6	-416.61	-14.67	0
1990	2693.3	-145.91	-5.14	0
1991	3184.5	345.29	12.16	0
1992	3239.4	400.19	14.1	0
1993	2717.7	-121.51	-4.28	0
1994	3410.8	571.59	20.13	0
1995	2858.8	19.59	0.69	0
1996	2609.9	-229.31	-8.08	0
1997	3252.5	413.29	14.56	0
1998	3151.4	312.19	11	0
1999	2914.7	75.49	2.66	0
2000	2412.5	-426.71	-15.03	0
2001	2921.7	82.49	2.91	0
2002	2530.8	-308.41	-10.86	0
2003	2414	-425.21	-14.98	0
2004	2937.3	98.09	3.45	0
2005	3151	311.79	10.98	0
2006	3297.7	458.49	16.15	0
2007	3619.5	780.29	27.48	0
2008	2534.2	-305.01	-10.74	0
2009	2815.9	-23.31	-0.82	0
2010	3142	302.79	10.66	0
2011	3041.6	202.39	7.13	0
2012	2187.6	-651.61	-22.95	Mild

[Source: Venkatesan *et al.* (2015)]

The study conducted by Krishnakumar *et al.* (2009) by analysing the rainfall pattern from 1871 to 2005, revealed that there was significant decrease in southwest monsoon rainfall while increase in post-monsoon season over the state. It was also observed that there was a diminishing trend in annual and monsoon rainfalls across the Western Ghats. The monthly variations in rainfall revealed that the contribution of June and July rainfall is decreasing while that of August and September is increasing.

The distribution of South West monsoon and North East monsoon from 1ST June to 30th September 2016 and October 1, to December 27, 2016 is given in the tables 2 and 3 respectively. It could be seen that, the departure from normal rainfall that is, coinciding with the period of the South West monsoon was found to be -34 per cent and the departure from normal rainfall for the period that is coinciding with the period of the North East monsoon was -61 per cent (Figure 3 and 4).

Table 2: Distribution of South West monsoon rainfall from 1ST June 2016 to 30th September 2016

SOUTHWEST MONSOON RAINFALL 2016				
1ST JUNE 2016 TO 30TH SEPTEMBER 2016				
SUB /DISTRICTS	DIVISION	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage Departure (%)
KERALA		1352.3	2039.7	-34 Deficient
ALAPPUZHA		1135.3	1745.9	-35 Deficient
KANNUR		1991.0	2669.0	-25 Deficient
ERNAKULAM		1569.4	2065.0	-24 Deficient
IDUKKI		1569.5	2276.2	-31 Deficient
KASARAGOD		2252.9	3007.5	-25 Deficient
KOLLAM		950.8	1332.3	-29 Deficient
KOTTAYAM		1330.7	1897.3	-30 Deficient
KOZHIKODE		1888.1	2603.1	-27 Deficient
MALAPPURAM		1252.9	2060.4	-39 Deficient
PALAKKAD		1034.9	1572.7	-34 Deficient
PATHANAMTHITTA		1091.4	1715.7	-36 Deficient
THIRUVANANTHAPURAM		572.4	871.3	-34 Deficient
THRISSUR		1219.6	2197.5	-44 Deficient
WAYANAD		1073.8	2632.1	-59 Deficient

(Source: Indian Meteorological Department)

Table 3: The distribution of North East monsoon rainfall from
1st October 2016 to 31st December 2016

NORTHEAST MONSOON RAINFALL 2016				
1st OCTOBER 2016 TO 31st DECEMBER 2016				
SUB DIVISION /DISTRICTS	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage Departure (%)	
KERALA	185.0	480.7	-62	Large deficient
ALAPPUZHA	208.4	572.1	-64	Large deficient
KANNUR	84.4	345.1	-76	Large deficient
ERNAKULAM	295.1	489.3	-40	Deficient
IDUKKI	174.0	564.2	-69	Large deficient
KASARAGOD	71.1	337.9	-79	Large deficient
KOLLAM	406.8	638.6	-36	Deficient
KOTTAYAM	252.3	535.1	-53	Deficient
KOZHIKODE	74.5	422.2	-82	Large deficient
MALAPPURAM	118.3	448.3	-74	Large deficient
PALAKKAD	137.6	428	-68	Large deficient
PATHANAMTHITTA	425.8	624.2	-32	Deficient
THIRUVANANTHAPURAM	112.4	522.7	-79	Large deficient
THRISSUR	152.1	469.4	-68	Large deficient
WAYANAD	104.9	332.5	-68	Large deficient

(Source: Indian Meteorological Department)

South West Monsoon Rainfall received from June 1 -Sep 30,2016, in mm

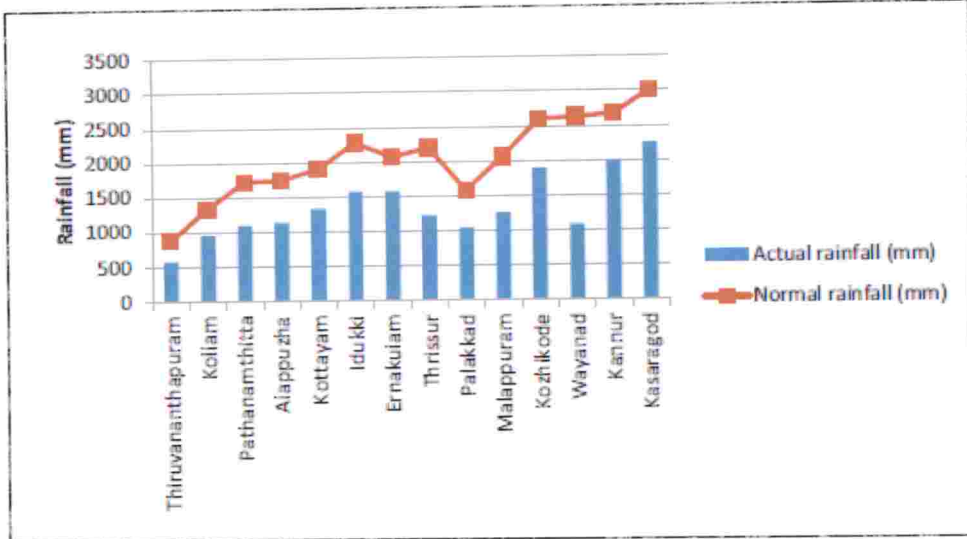


Fig. 3. South West monsoon rainfall received
(From 1 June 2016 to 30 Sept 2016)

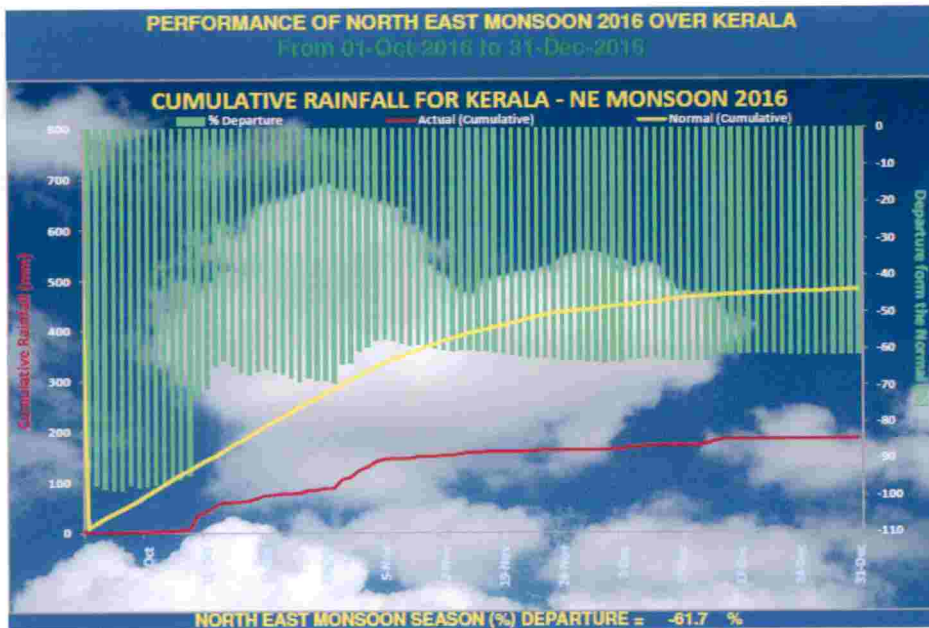


Fig. 4. Performance of North East monsoon received
(From 01 Oct 2016 to 31 Dec 2016)
[Source: Indian Meteorological Department]

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The district rain fall departure map of Kerala for the period from 1-06-2017 to 09-09-2017 is given in Figure 5.

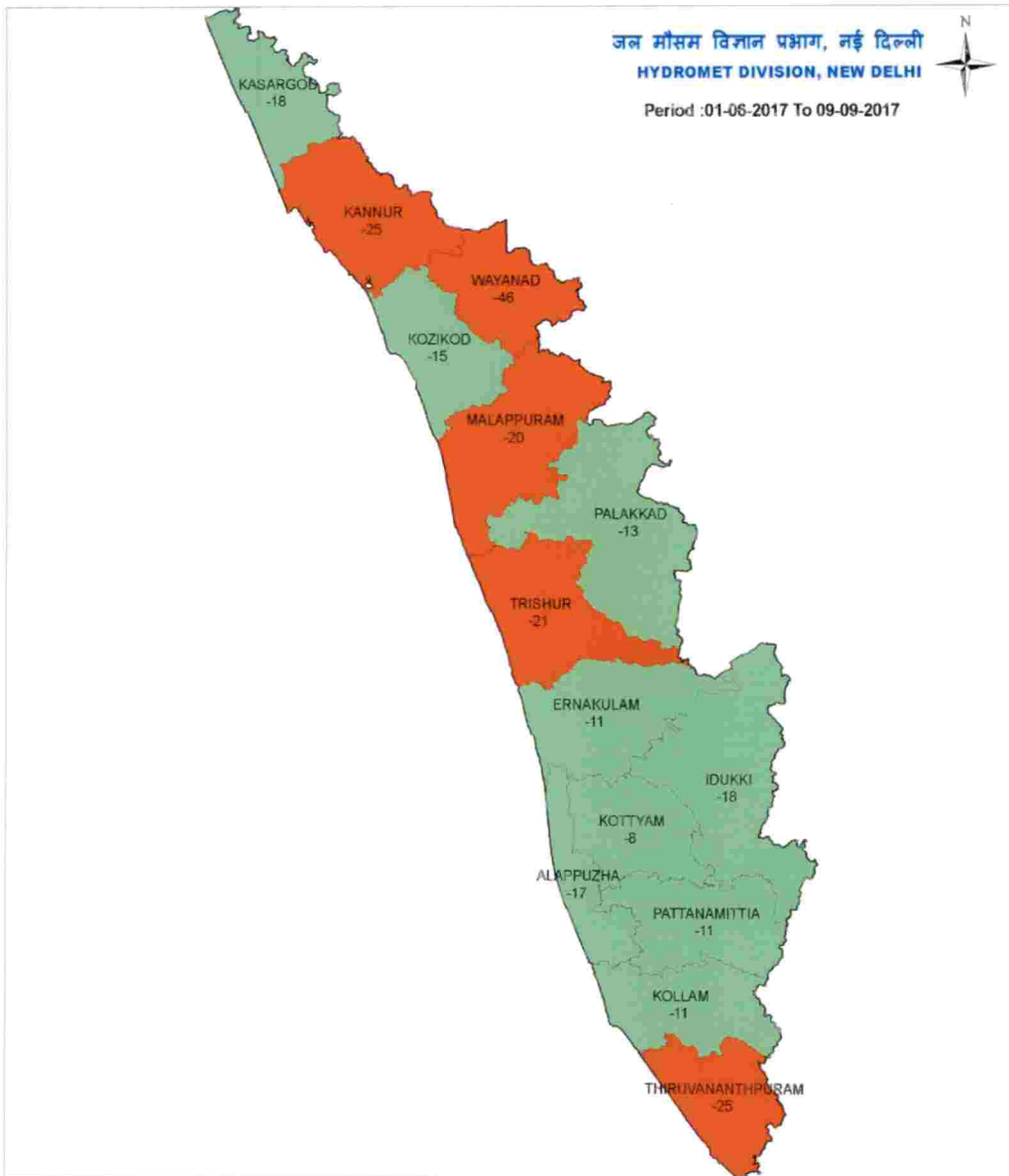


Fig. 5. District Rain fall departure map – Kerala
for the period from 1-06-2017 to 09-09-2017

■ Normal [-19% to 19%] ■ Deficient [-59% to -20%]

(Source: Indian Meteorological Department)

The contribution of southwest monsoon rainfall to the annual value is declining while the post monsoon contribution is increasing. The moisture index across the State of Kerala was moving from B4 to B3 humid, indicating that the State was moving from wetness to dryness within the humid climate (Gopakumar, 2011).

2.1.2.3. Temperature

According to the Indian Meteorological Department (IMD) the maximum, minimum and mean temperature over the State has increased by 0.8°C, 0.2°C and 0.5°C respectively during the last 43 years from 1961-2003.

Rao *et al.* (2009), reported that there was an increase in maximum temperature over the state by 0.64°C during the period of 49 years, commencing from 1956 to 2004 while the increase in minimum temperature was 0.23°C (Gopakumar, 2011).

The temperature range over Kerala from 1956 to 2009 showed an increase of 0.51°C. The temperature range increased from 8.1°C in 1956 to 8.8°C in 2009 (Fig. 6).

2.1.2.4. Drought

The State of Kerala experienced 53 drought years out of 109 (1901-2009), of which 17 were moderate, 19 large, 13 severe and four disastrous droughts (Fig. 7). The intensity of summer droughts was increasing across the State of Kerala though it falls under the heavy rainfall zone due to unimodal rainfall. (Economic Review, 2016).

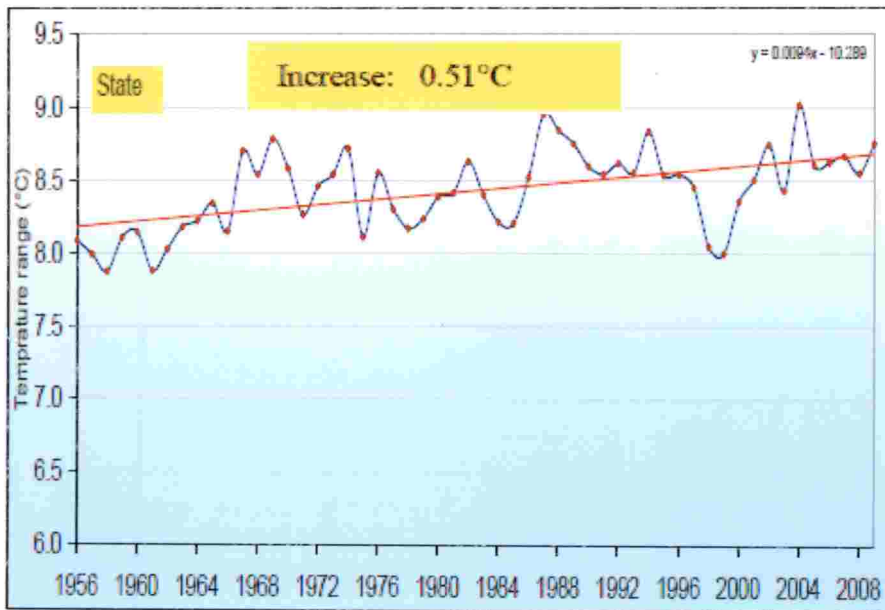


Fig 6. The temperature range over Kerala from 1956 to 2009

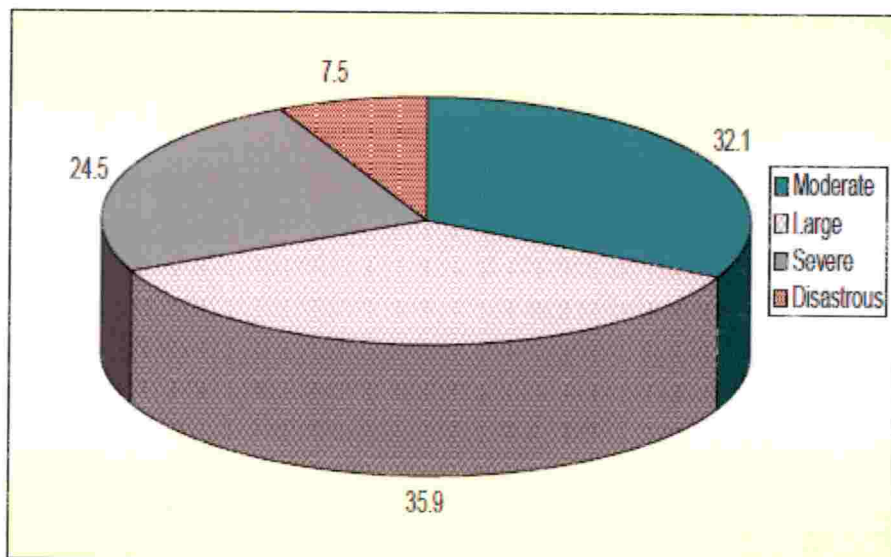


Fig 7. Intensity of climatological droughts (%) over Kerala

(Source: Indian Meteorological Department)

2.1.2.5. Vulnerability

Located at the extreme southern tip of the Indian subcontinent, Kerala lies near the centre of the Indian tectonic plate; hence, the state is subject to comparatively little seismic activity. Kerala State has the third highest population density in India, having a fragile and closed eco-system, with 590 km long coastline. Therefore, the coastal population is highly vulnerable and even a few millimetres rise in sea level can cause tremendous damage.

Further, Kerala is categorized as a multi-hazard prone state due to its vulnerability to a multitude of disasters. There were a series of natural disasters over the years, including the tsunami of 2004 and ‘*Okhi*’ cyclone of 2017, which were very devastating and hazardous in nature. The state falls under earthquake Zone III making it moderately vulnerable to earthquakes of magnitude 6.5 or more. It is becoming increasingly prone to disasters and experiences various kinds of calamities of recurrent nature resulting in loss of life, livelihood, property and disruption of economy. The state experiences heavy rainfall and resultant floods during the monsoon, with subsequent damage to life and property. Coastal erosion along the sea shores is very frequent and severe, necessitating evacuation and rehabilitation of the people in that area. The State is vulnerable to cyclone and experiences high winds due to the westward movement of cyclonic storms. Landslide or landslip is another hazard of the hilly regions of the state. Drought conditions have also become more frequent in the state with the failure of monsoon. The threat of global warming and its resultant climatic variations and environmental issues increases the vulnerability of the state (Gopakumar, 2011; Economic Review, 2016).

The climate induced changes are going to adversely affect livelihood options of the people of Kerala, which has a 590 km long coastline. This

clearly indicates the vulnerability of the coastal population of Kerala even to a few millimetres rise in sea level (Sundaresan, 2011).

Rao, (2011) reported that the impact of climate change in the form of climate variability like floods and droughts, adversely affected food and plantation crops to a large extent and thus there is an urgent need to adapt crop management, crop improvement and crop protection strategies in tune with projected climate change scenarios so as to mitigate the ill effects of weather aberrations and sustain agricultural production in ensuing decades.

2.2. Concept of variables and their review

2.2.1. Dependent variable

Considering the objectives of the study and review of literature, the integrated climate change adaptive capacity was taken as the dependent variable of the study.

2.2.1.1. Concept of integrated climate change adaptive capacity

Developing a better understanding of the adaptation capacity provides the ground for wiser agricultural and environmental policies. Adaptation has been recognized as an important strategy to reduce the impacts of climate variability and change because it can lower vulnerability and can increase resilience to climate change (ADB, 2009).

Mendelsohn (2001) defined adaptation as activities which society undertakes to diminish the damaging effects of climate change or take advantage of the beneficial opportunities which may arise from the change in climate.

Adaptive capacity is the ability of farmers to adjust to climate change, to temper/lessen potential damages, and to take advantage of opportunities or to cope with consequences. The enhancement of adaptive capacity is an effective means of facilitating adaptation to climate change and variability

especially for vulnerable groups such as small-scale farmers in developing countries (IPCC 2001).

Adaptation to short-term climate variability and extreme events serves as a starting point for reducing vulnerability to longer-term climate change. The indicators of adaptive capacity are more difficult to identify than indicators of risk as adaptive capacity is not measurable directly Lim *et al.* (2004).

Sietchiping (2007) defined adaptive capacity as the ability of a system to adjust to climate-induced changes (including climate variability), by accommodating the associated risks or taking advantage of any opportunities.

Adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. (IPCC, 2007b).

Tompkins *et al.* (2010), stated that adaptation involves reducing risk and vulnerability, seeking opportunities, building the capacity of nations, regions, cities, the private sector, communities, individuals and natural systems to cope with climate impacts, as well as mobilizing that capacity by implementing decisions and actions.

Phi (2011), opined that understanding of adaptive capacity is recognised as an important step for achieving successful adaptation.

Adaptation is defined as the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (ADB, 2012).

According to Miller *et al.* (2012), successful adaptation minimises the negative impacts and maximises the positive impacts resulting from climate change, leading to resilience. The capacity to adapt to climate change at the farmer level depends on different factors.

Dang *et al.* (2012) considered climate change adaptation as a decision-making process under uncertainty. The concept of adaptive capacity is complex and has to recognise the social, economic, technological and physical context that adaptation takes place.

Harmer and Rahman (2014) opined that farmers in developing countries are continuously adapting to risk arising from uncertainty in constantly changing climate, weather events, and volatile or imperfect markets.

Defiesta and Rapera (2014) defined adaptive capacity as the ability of the farming house hold to adjust to climate change and /or to the recover from their impacts. Noble *et al.* (2014) opined that, adaptation needs are the gap between what might happen as the climate changes and what we would desire to happen.

According to Simpson (2016) adaptive capacity is the ability of a system or household to adjust to climate change – including weather variability and extremes – to avoid or reduce potential damages, to cope with the consequences and to take advantage of opportunities.

Adaptive capacity in this study is operationally defined as the potential of a farmer to cope with the adverse effects of climate change and variability. Adaptation aims in preventing harmful effects by exploiting opportunities. Thus Adaptive capacity indicates the potential, capability or ability of a system to adapt to climate change or their effects or impacts. The Integrative Adaptive Capacity, in this study was operationally defined as the potential of a farmer to cope with the adverse effects of climate change by adjustments in the bio-physical, agricultural, ecological, socio-economic, technological and managerial systems leading to sustainable livelihood.

2.2.1.2. Factors and indicators of integrated adaptive capacity

There are several approaches and methods for assessing adaptive capacity like; Ricardian approach employed by Mendelsohn *et al.* (1994), adaptive capacity index approach (Metzger, 2005; Vincent, 2007; Sietchiping, 2007; Dang *et al.*, 2012; Phi, 2010; Nelson *et al.*, 2010; Defiesta and Rapera, 2014; Noble *et al.*, 2014), climate modelling etc. For conceptualising the adaptive capacity at the local level, it becomes necessary to identify the factors and indicators contributing to it. The different assessment frameworks developed/followed by some researchers, relevant for this investigation is discussed here.

The IPCC (2001) identified economic wealth, technology, information and skills, infrastructure, institutions and equity as the principal determinants of adaptive capacity.

Assessments of adaptive capacity at the national level were done with an emphasis on assets and capital. Vincent (2007) developed the National Adaptive Capacity Index (NACI) for comparing adaptive capacity among African countries and adaptive capacity index by measuring the weighted average of five composite sub-indices: economic wellbeing and stability (20%), demographic structure (20%), global interconnectivity (10%), institutional stability and wellbeing (40%) and natural resource dependence (10%) (Fig: 8).

Considering the multi-faceted nature, the psychological, social and institutional aspects of adaptive capacity were taken into account for studies. Sietchiping (2007) had found that overall adaptive capacity to climate change derived from the three major themes: socio-cultural, economic and institutional/infrastructure (Fig.9).

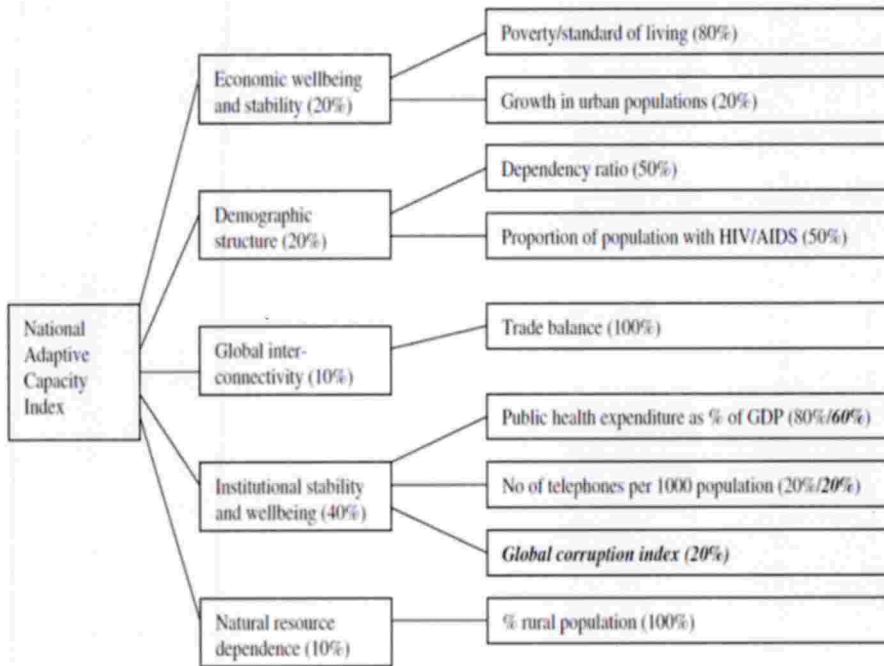


Fig. 8. Structure of the National Adaptive Capacity Index by Vincent (2007)

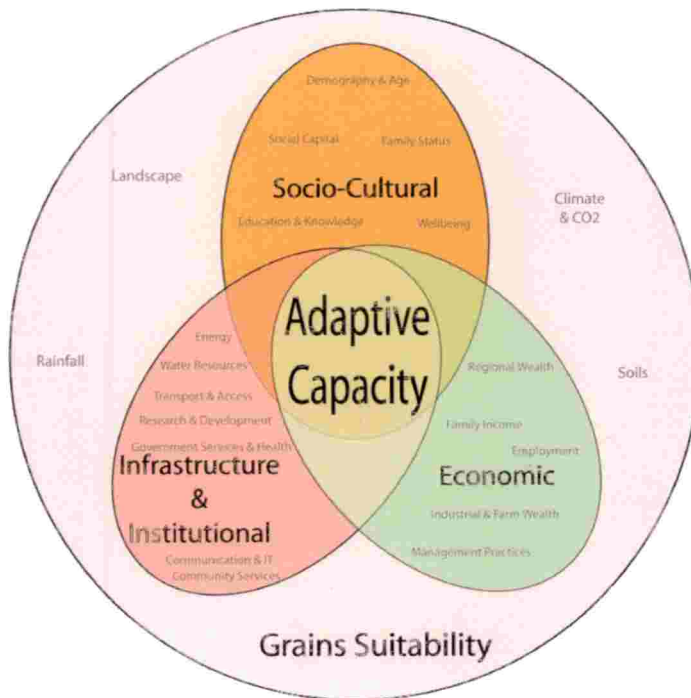


Fig. 9. Components of the Adaptive Capacity Framework by Sietchiping (2007)

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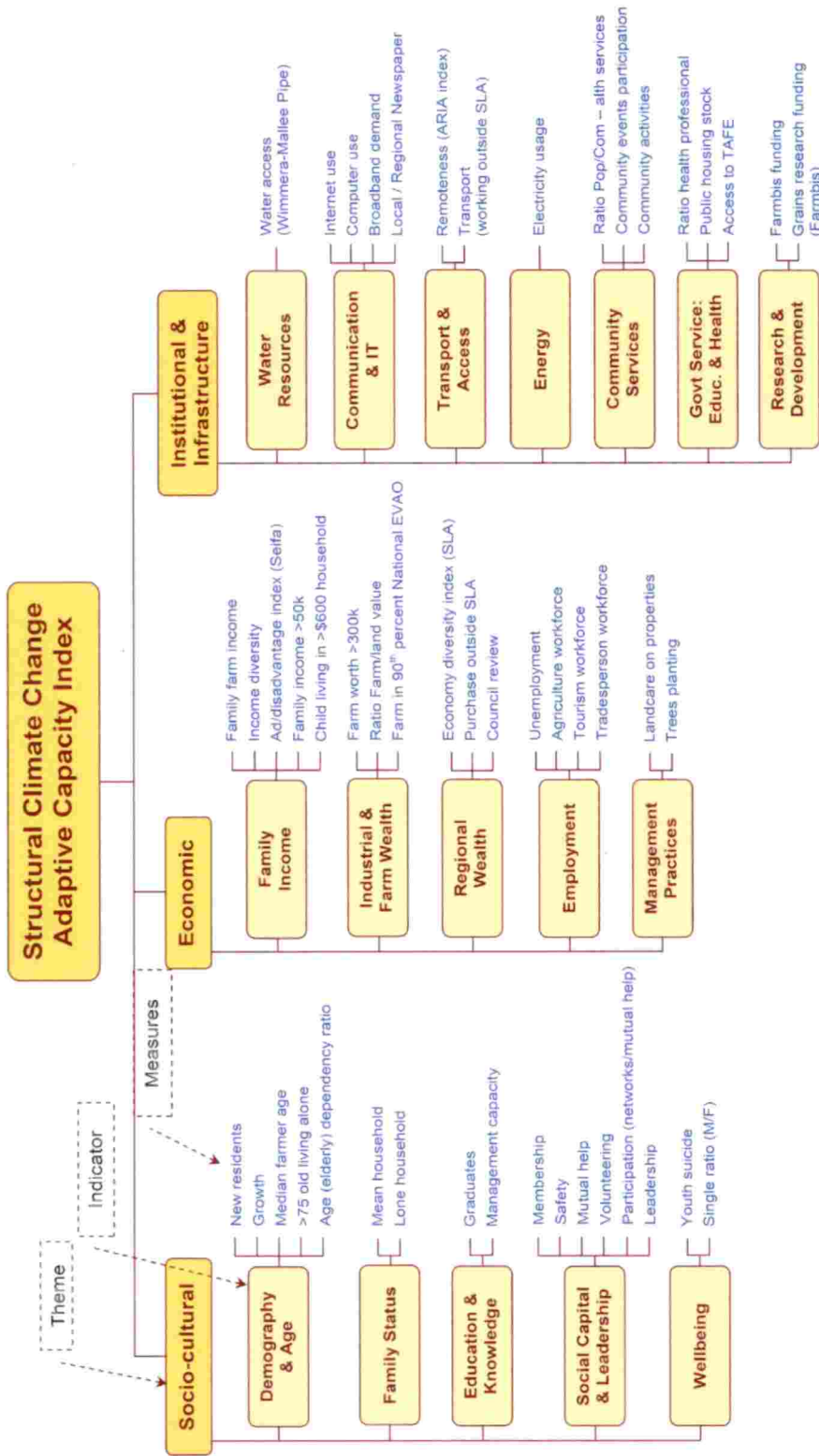


Fig. 10. Themes, indicators and measures used to determine Adaptive Capacity Index by Sietchiping (2007)

Each theme has a series of indicators and measures, informed by the climatic and biophysical conditions such as soils, climate, CO₂, landscape and rainfall. All the themes, along with their respective indicators and measures contribute to the overall adaptive capacity (Fig.10).

Reidsma *et al.* (2007a), analysed farm performance in Europe under different climatic and management conditions through a multilevel analysis of two groups of factors related to (1) farm characteristics and (2) regional conditions such as biophysical, socio-economic and policy factors (Fig. 11). Both factor groups represent different levels of organization (farm and region) and accounts for possible interactions between farm characteristics and regional conditions on farm performance.

Household capacity attributes were categorized into five classes of livelihood capital: human capital (education, health, attitudes, belief systems); financial capital (monetary savings, income composition) natural capital (soil quality, water endowments); physical capital (equipment, transport) and social capital (connectivity in social or political networks) (Scoones, 1998; Ellis, 2000) (Fig. 12).

According to Ostrom, (2009) the social-ecological systems can be described by four main blocks: (1) the Resource System (RS); (2) the Resource Units (RU); (3) the Governance Systems (GS) and (4) the Users (U) (Fig.13).

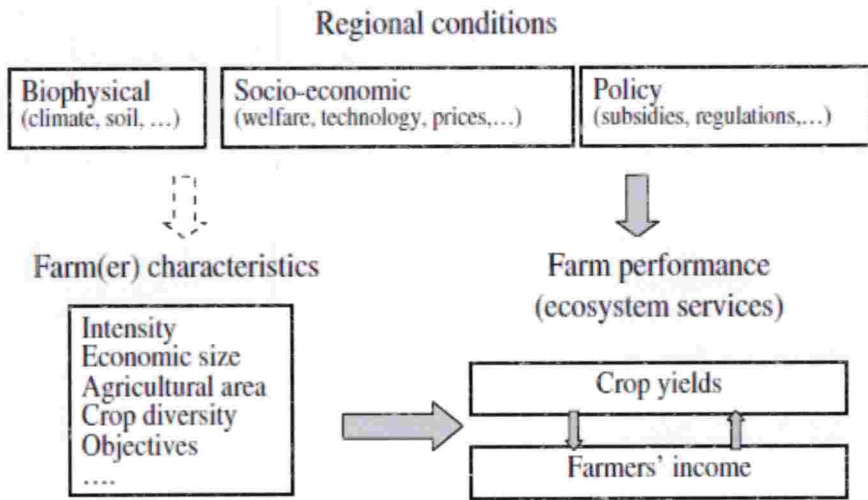


Fig: 11. Determinants of Adaptive capacity developed by Reidsma *et al.*, (2007a)

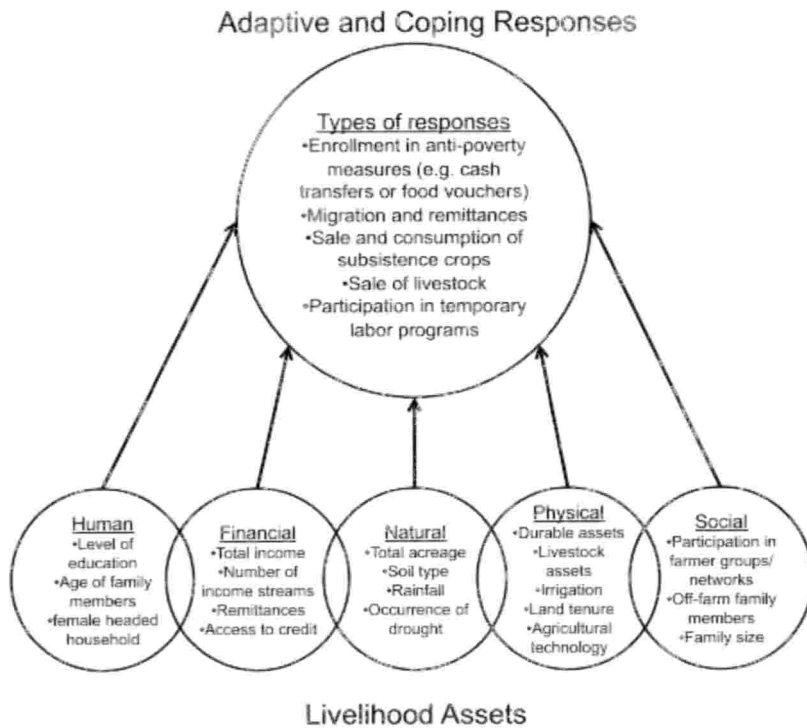


Fig: 12. Relationship between capitals, adaptive and coping responses (Scoones, 1998 and Ellis, 2000)

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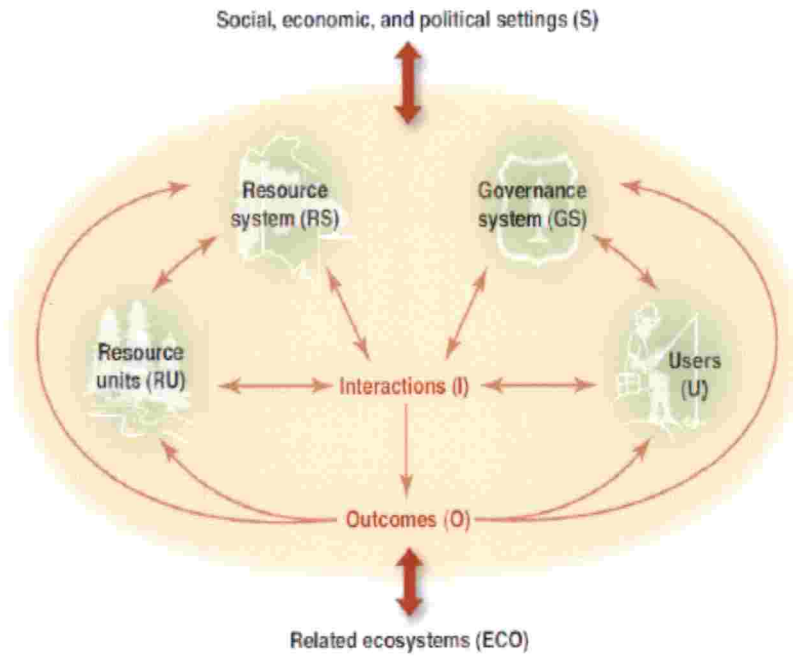


Fig: 13. The socio-ecological system proposed by Ostrom (2009)

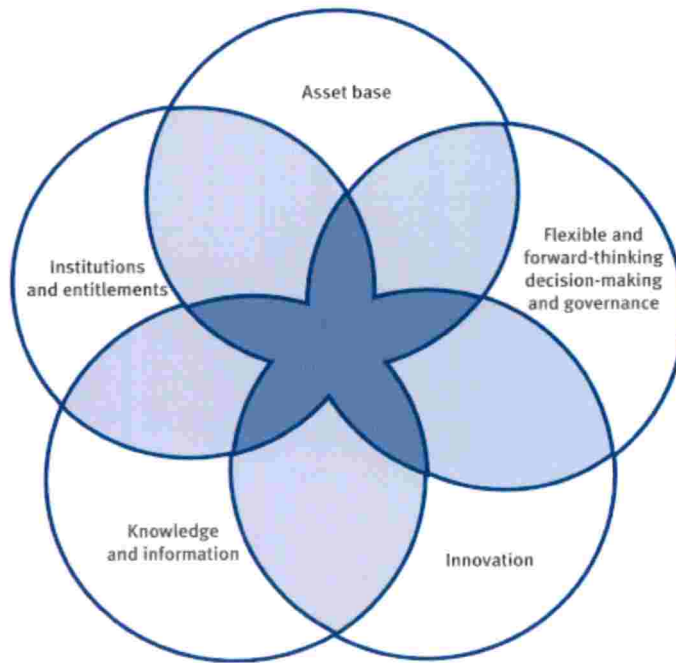


Fig: 14. The characteristics of adaptive capacity at local level (Jones *et al.* (2010)

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Based on the findings of the African Climate Change Resilience Alliance's (ACCRA) consultative process, the framework identified five inter-related characteristics that are conducive to adaptive capacity: the asset base, institutions and entitlements, knowledge and information, innovation and flexible forward-looking decision-making (Jones *et al.*, 2010) (Fig. 14).

Table.4. ACCRA's Frame work for assessing adaptive capacity at the local level

Characteristic	Features that reflect high adaptive capacity
Asset base	Availability of key assets that allow the system to respond to evolving circumstances
Institutions and entitlements	Existence of an appropriate and evolving institutional environment that allows fair access and entitlement to key assets and capitals
Knowledge and information	The system has the ability to collect, analyze and disseminate knowledge and information in support of adaption activities
Innovation	The system creates an enabling environment to foster innovation, experimentation and the ability to explore niche solutions in order to take advantage of new opportunities
Flexible forward-looking decision-making and governance	The system is able to anticipate, incorporate and respond to changes with regard to its governance structures and future planning

Many frameworks have strong links to the Sustainable Livelihoods (SL) framework and have adopted the SL's five 'capitals' (human, economic, social, physical and natural) as direct indicators of adaptive capacity at the community and household levels (Dang *et al.*, 2012). Adaptation to climate change and risks takes place in a dynamic social, economic, technological, biophysical, and political context that varies over time, location and sector (Asante *et. al.* 2012).

According to Pathak, *et al.* (2012), the transfer of knowledge as well as access to social, economic, institutional and technical resources need to be provided and integrated within the existing resources of farmers. Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change.

Adaptation goals are often expressed in a framework of increasing resilience, which encourages consideration of broad development goals, multiple objectives, and scales of operation and often better captures the complex interactions between human societies and their environment. The capacity to adapt is dynamic and influenced by economic and natural resources, social networks, entitlements, institutions and governance, human resources, and technology (Noble *et al.*, 2014).

Phi (2011) had developed a framework for assessment of adaptive capacity to climate change based on the complex interplay among system components, functions and interactions. Each of these elements is represented by one block and the whole setting is bounded by the broader social, economic and political environment as well as the related ecosystems (Fig. 15).

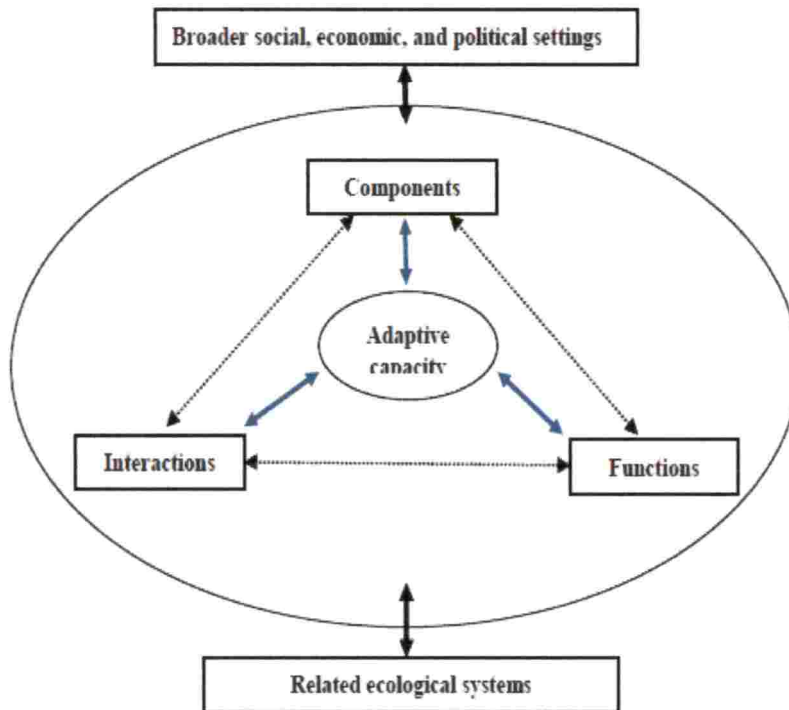


Fig: 15. Configuration of the elements defining Adaptive capacity by Phi (2011)

Defiesta and Rapera (2014) in their study on ‘measuring adaptive capacity of farmers to climate change and variability: application of a composite index to an agricultural community in Philippines’, the following indicators and sub indicators were identified.

Table.5. Indicators and sub-indicators of adaptive capacity as given by Defiesta and Rapera (2014)

Sl.No	Indicators	Sub-indicators	Description/Measure
1	Human Resources	Farming experience	The number of years that the respondent has been in farming
		Educational attainment of household head	The number of years spent in school by the household head
		Percentage of adults with primary education	The number of adults in the household that had some elementary education expressed as percentage of the total number of adults in the household

		Percentage of adults in the household	The number of adults in the household expressed as percentage of the total number of household members
2	Physical Resources	Farm size	The farm size in hectares
		Irrigation	Source of irrigation
		Ownership of farm implements/machines	The number of useful farm machines owned by the farming household
		Farm tenure	Type of farm occupancy
3	Financial resources	Remittances from family members	The amount of remittances/regular monetary assistance received by the household
		Value of animal units	The estimated total value of animals owned and raised by the household
		Receives financial assistance/subsidy from the government	If the respondent has regularly availed of financial assistance or subsidy for farming from the government
		Has access to credit	If the respondent knows a source of credit (formal or informal) or if he/she has availed of credit to finance farming
4	Information	Type of trainings on farming	The type of training undergone by the farmer in the last 5 years from 2006-2010
		Receives technical assistance	If the farmer has been visited by or has consulted an agricultural technician from 2006-2010
		Participates in farm organization	If the respondent is a member of a farmers' organization
		Sources of climate information	The number of sources of climate data accessed by the farmer
5	Livelihood diversity	Number of livelihoods/sources of income	The number of all sources of income and employment of all household members
		Percentage of land not in crops	The percentage of land not devoted to crop production
		Number of crops planted	The number of crops planted per year

Gemmingen (2014) stated that there were many attempts to structure the ingredients of the adaptive capacity and summarised the dimensions of adaptive capacity as: knowledge, technology, institutions and economy.

- **Knowledge:** this refers to general levels of education and awareness about issues such as climate change and its impact, as well as dissemination of information on climate and weather conditions.
- **Technology:** this includes the availability of and access to technological options for adaption and the technological stage in the development of a system. It could incorporate new or the improvement of existing technological solutions.
- **Institutions:** this covers a multitude of governance, institutional and legal concerns, including the capacities and efficiency of key institutions, enforcement of environmental laws, transparency of procedures and decision making. This dimension could further include accountability and participation practices in ensuring sustainable management of natural, financial and human resources.
- **Economy:** includes GDP, employment/unemployment rate (in rural or urban areas), share of GDP for a given economic sector, and a country's dependency on food and energy imports. At a micro level this can also include household income, food expenditure, housing and dependency ratios.

Lockwood *et. al.* (2015), examined adaptive capacity using a psychometric self-report approach to identify the dimensions of adaptive capacity and their relative importance. They have briefed the dimensions of adaptive capacity as: social capital, human, financial and physical capital, management approach, and governance. In their study they have identified local networks, trust in government, reciprocity, information behavior, labor and time, finance and infrastructure, innovation, adaptive management and governance as the adaptive capacity subscales.

Based on the review, expert discussion and judges rating procedure, the bio-physical, socio-economic, agricultural, ecological, technological and managerial factors were selected for conceptualising the integrated climate change adaptive capacity index for the study.

2.2.1.3. 1. Bio-physical Factors

Biophysical vulnerability is concerned with the ultimate impacts of a hazard event and is often viewed in terms of the amount of damage experienced by a system as a result of an encounter with a hazard. Geographical factors are extremely important in determining people's exposure to the physical impacts of climate hazards. For example low-lying areas will be more liable to flooding as a result of extreme rainfall events than higher elevation regions, and coastal areas will be subject to a range of hazards (from hurricanes to storm surges and wave erosion) that are absent from inland regions (Adger *et al.*, 2004).

Adaptation aims to reduce the vulnerability and improve the adaptive capacity, or resilience of people who rely on climate-dependent resources for their livelihoods. Reynolds and Nierenberg (2012) stated that as agriculture relies on healthy soil, adequate water and a delicate balance of gases such as carbon dioxide and methane in the atmosphere, farming is the human endeavour most vulnerable to the effects of climate change.

The fertility status of farmers' fields will influence their perception and adaptation to climate change. Farmers who perceived that their lands are infertile are less likely to adapt to climate change (Fosu-Mensah *et al.*, 2012).

2.2.1.3.2. Agricultural Factors

Wide crosses (between different species) to transfer drought or heat tolerance from a wild to a cultivated species should increase the potential for relatively rapid response to temperature rise and its indirect effects on other climatic factors (Nelson *et al.*, 2010).

In the study conducted by Muhumuza *et al.* (2011), the major climate change adaptations reported by smallholders were; mulching of gardens, planting trees, planting early mature crops, making terraces, shifting to other locations and growing of crops near and in wetlands in order to access water during the dry seasons.

Fosu-Mensah *et al.* (2012) identified crop diversification and changing crop planting dates as the major adaptation strategies to a warmer climate.

Societies have a long record of adapting to the impacts of weather and climate through a range of practices that include crop diversification, irrigation, water management, disaster risk management, and insurance, but climate change, along with other drivers of change, poses novel risks often outside the range of experience (Noble *et al.*, 2014).

In the agriculture sector, adaptation requires the use of good agricultural, forestry and fisheries practices to meet changing and more difficult environmental conditions. Examples of adaptation practices in agriculture include changing timing of planting or sowing, applying new technologies and promoting agro-biodiversity. High density and diversified agro-forestry is a climate-smart technique for adaption to climate change (FAO, 2015).

In the study conducted by Kimani and Bhardwaj (2015), the main adaptation options by farmers in the mid-hills of Himachal Pradesh, in the face of increased temperature in the region included change of crop variety

(61.6%), planting early maturing crops (50%), change of planting dates (47.4%), practicing mixed cropping (39.9%), reusing water (32.8%), planting of drought resistant crops (32.5%), use of water harvesting schemes (31%), irrigation (18.7%), reducing the number of livestock (5.6%) and changing from crops to livestock (4.9%).

The result of adaptation measures by the respondents against climate change showed that majority of the respondents are using organics /green managing in sequence cropping. Other adaptation measures used by the respondents included: crop rotation, optimum utilization of agricultural chemicals, use of resistant varieties, integrated natural resource management, revising planting dates, plant densities and crop sequence; reduced tillage, change in cropping pattern and better capture and storage of rain water (Vani and Kumar, 2016).

2.2.1.3.3. Ecological Factors

Sustainable agriculture implies the ability of agro-ecosystems to remain productive in the long-term. Backer *et al.* (2009) suggested that organic crops are environmentally favourable, but may ignore the effect of reduced productivity, which shifts the potential impact to other parts of the food provision system.

Planting trees presents an opportunity to reduce climate change impacts by storing additional carbon that can help offset carbon dioxide emissions and mitigate climate change. Tree planting that enhances forest health and resilience will also help these ecosystems adapt to climate change (Muhumuza *et al.*, 2011).

Harnessing the services provided by environmental buffers can reduce the severity of floods and droughts. Examples include ensuring increased vegetative land cover and preserving and re- establishing mangroves, peat lands, and forests (which help to regulate the hydrologic cycle, improve soil moisture retention and groundwater recharge, and minimize the severity of floods) (ADB, 2012).

2.2.1.3.4. Socio-economic Factors

The adaptive capacity of communities is determined by their socioeconomic characteristics (Smith *et al.*, 2001).

According to Adger *et al.* (2004), a weak, inefficient or corrupt institutional infrastructure is likely to lead to a neglect of physical infrastructure and to increase inequality as certain groups are favoured through systems of patronage.

Adaptive capacity is influenced by social factors such as human capital and governance structures. There are many examples where social capital, social networks, values, perceptions, customs, traditions and levels of cognition affect the capability of communities to adapt to risks related to climate change. Economic conditions are important to build the resilience of communities and industries to climate change (Brooks *et al.*, 2005)

According to Smith and Wandel (2006), there is the need for human capacity and social capital to implement adaptation actions, including education and access to information.

Schipper (2009) stated that in both adaptation and disaster risk reduction, there is an implicit acknowledgement that risk is part of everyday life, and thus social development plays a vital role.

Fosu-Mensah *et al.* (2012) reported that the four most important factors that influenced adaptation measures in response to declining precipitation and rising temperatures are access to credit, access to extension services, the fertility status of the soil, and land tenure.

According to Defiesta and Rapera (2014), better financial standing signifies higher ability to finance adaptation/coping measures and recovery mechanisms to climate change risks. Neglia (2014) delineated the economic benefits of adaptation as: sustained or increased agricultural production, higher household incomes, enhanced environmental services, protection of the asset

base, and less vulnerability to extreme weather events. Tiwari *et al.* (2014) reported that factors such as resources availability, family labor availability, farm income, institutional activities and involvement in the community level organization of households influenced adaptation practices. Also, the local institutions were found to have limited capacity to implement the adaptation practices in the rural areas.

Inderberg *et al.* (2015) argued that indigenous peoples' ability to adapt to local environmental changes resulting from global climate change is constrained both by a changing set of parameters (rainfall, temperature, water and soil quality) and also by pressures on social, political and economic dimensions which limit their room for manoeuvre in adapting to changes.

2.2. 1.3.5. Technological Factors

Many of the adaptive strategies identified in the management of climate change directly or indirectly involve technology (e.g., warning systems, protective structures, crop breeding and irrigation, settlement and relocation or redesign, flood control measures, etc.) and a community's current level of technology and its ability to develop technologies are important determinants of adaptive capacity. Regions with the ability to develop technology have enhanced adaptive capacity. (Smith *et al.*, 2001).

Technology can potentially play an important role in adapting to climate change. Efficient cooling systems, improved seeds, desalination technologies, and other engineering solutions represent some of the options that can lead to improved outcomes and increased coping under conditions of climate change (Smith and Skinner, 2002).

Adger *et al.*, (2004) stated that technical capacity is the capacity to exploit science and technology in order to facilitate adaptation.

Technology, research and development could contribute to a range of short-term adaptation strategies to increase the resilience of grains and such adaptation strategy includes the development of plant species more suited to changing regional conditions, increasing soil fertility and resistance to pest and diseases, reducing moisture stress and minimising sensitivity to frost, extreme heat and variation in crop timing (Sietchiping, 2007).

As per Gemmingen (2014), the technological factor includes the availability of and access to technological options for adaption and the technological stage in the development of a system, it could incorporate new or the improvement of existing technological solutions.

New technologies can be developed to adapt to climate change, and the transfer of appropriate technologies to the farmers form an important component for sustaining the farm production. The technologies should be economically feasible, culturally desirable and functionally viable.

2.2.1.3.6. Managerial Factors

Building adaptive capacity requires a strong, unifying vision; scientific understanding of the problems; an openness to face challenges; pragmatism in developing solutions; community involvement; and commitment at the highest political level (Holmes, 1996).

Sterk *et al.* (2006) found that farmers do not search for optimal strategies; rather they adapt their management gradually over the years.

Sietchiping (2007) stated that climate change calls for strategic planning that builds resilience in vulnerable areas to manage the associated risks. Howden *et al.* (2007), reported that altering the timing and location of cropping activities is a farm management change.

Modifying inputs could include use of varieties and species that have more appropriate thermal time and vernalization requirements and/or increased resistance to heat shock and drought. The impact of climate variability on crop yields largely depends on farm characteristics; therefore farm management is an important feature to be considered when analyzing climate adaptation (Reidsma *et al.* 2007b).

In taking agricultural decisions, the factors other than climate influence farmers' choice or decision, like the availability and/or cost of inputs, market for the produces, etc. (Fosu-Mensah *et al.*, 2012).

According to Tiwari, *et al.* (2014), production factors, natural and physical capital, education and gender of household head and social and financial capital were significantly associated with adaptive capacity.

2.2.2. Concept of Independent variables and their review

The concept of adaptation has changed its focus from biophysical vulnerability to wider social and economic drivers of vulnerability and people's ability to respond. These drivers include the gender, age, health, social status, and ethnicity of individuals and groups, and the institutions in place locally, nationally, regionally, and internationally.

Characteristics like farm size, area sown with a specific crop, access to technology, education, tenancy status, attitude towards risk and contact with extension agents are the main factors that affect technology adoption (Sheikh *et al.* 2003).

Maddison (2006) from the review of studies on adoption of new technologies identified farm size, tenure status, education, access to extension services, access to market, and credit availability as the major determinants of the speed of adoption in Africa.

Mandleni and Anim (2011), in their study on climate change awareness and decision on adaptation measures by livestock farmers in South

Africa, indicated that marital status, formal extension and the way in which land was acquired, significantly affected awareness of climate change.

Adeola (2014) stated that the knowledge of farmers' current practices and their effect on food production and income generation will give background information to support farmer's efforts at adapting to climate change or mitigating its effects.

The research results conducted by Javed *et al.* (2015) indicated that family size, access to credit, land holdings size, government extension and farm experience are significant determinants of farm level adaptation.

Kimani and Bhardwaj (2015) in their study on Assessment of people's perceptions and adaptations to climate change and variability in mid-hills of Himachal Pradesh, India identified that education of the household head, farming experience, off farm income, access to credit and extension services as factors that enhance adaptive capacity to climate change in the area.

Ndamani and Watanabe (2016) reported that education, household size, annual household income, access to information, credit and membership of farmer-based organization are the most important factors that influence farmers' adaptation to climate change.

Belay *et al.* (2017) concludes that farmers' capacity to choose effective adaptation options is influenced by household demography, farm size, income, access to markets, access to climate information and extension, and livestock production.

2.2.2.1. Age

Age was operationally defined as the number of years completed by the respondent at the time of investigation. Javed *et al.* (2015) stated that age of the farmer characterises his experience in farming and it is more likely, the older the farmer is, the more he is aware about the past and present climatic conditions over his life span.

Reghunath (2016) in her study on innovations in technology dissemination in Kannur district, reported that majority of the respondents in the study area were belonged to old age and middle age groups and participation of youth in agriculture is very low because they were not at all interested to take agriculture as their profession and our society looks agriculture as a profession with less social status.

2.2.2.2. Education

Daberkow and McBride (2003) stated that higher education level has a link with access to information on improved technologies and production challenges as education is expected to increase one's ability to receive, decode and understand information relevant to make innovative decisions.

Education is associated with poverty and marginalisation - the least educated members of a society are likely to be the most vulnerable to climate hazards in terms of livelihoods and geographical location. Education is strongly related to poverty and livelihoods; populations with overall low levels of education are more likely to depend on climate-sensitive economic activities such as agriculture (Adger *et al.* (2004).

Jaganathan (2004) reported that educational status of the farmers had positive and significant relationship with knowledge and adoption of organic farming practices.

Paavola (2008) reported that lack of education is a constraint that contributes to vulnerability. In Bangladesh education about disaster responses was greatly assisted by rising literacy rates, especially among women.

Maddison (2006) reported that there is a positive relationship between education and adaptation to climate change.

Apata *et al.* (2009) indicated that education influenced adaptation positively. Deressa *et al.* (2009) found a positive relationship between the education level of the household head and the adoption of improved technologies and adaptation to climate change.

According to Boyd and Osbahr *et al.* (2010), education can be seen as a public good that promotes dialog and networks and therefore allows the development of resilience at both the level of the individual learner and at the level of socio-ecological systems.

Pathak, *et al.* (2012), opined that the adaptive capacity of poor farmers is limited because of subsistence agriculture and low level of formal education.

For climatic change adaption strategies to be promoted sustainably, education is key and assessing the levels of education for any affected community helps to design the mechanisms for effective delivery of the required climatic related information for sustainable development. The higher the education level the greater the chances for interpreting and the environmental policies and the higher chances for innovation for better climate change adaptation and response mechanisms (Muhumuza *et al.*, 2011).

Fosu-Mensah *et al.* (2012) stated that farmers with higher levels of education are more likely to adapt to climate change. According to Javed *et al.* (2015), the more educated the farmer is, the more likely he will adopt different strategies in an effective way.

Defiesta and Rapera (2014) reported that, the more educated farmers have better access to information and technologies and are better able to exploit these resources in adapting to climate change.

Chinchu (2016) in his study on ‘indicators of sustainable agricultural development analysis among self-help groups (SHG) of “*Kudumbashree Mission*” in Thiruvananthapuram district of Kerala, stated that the educational status is encouraging the basic knowledge and understanding of the SHG members so as to receive latest agricultural technologies and lessons on sustainable agricultural practices. Acquisition of education influences the adoption of agricultural technologies by farmers.

2.2.2.3. Agricultural Land holding

Nagayets (2005) stated that globally, 85 per cent of all farms are operated by smallholder farmers (holders of less than 2 ha of farm plots).

According to Oduniyi (2013), the results of the analysis indicated that the information received and the size of the farm had an impact on climate change awareness in the area of study.

Farmers with bigger farm sizes have higher adaptive capacity, all other things being equal (Defiesta, and Rapera, 2014).

Ifeanyi-Obi *et al.* (2017) reported that majority of the farmers in his study area owned farms of one hectare and below which were acquired mainly through inheritance.

2.2.2.4. Annual Income

Wealth is believed to have a direct impact on the ability to bear risks. Farmers with higher income and greater assets are in better position to adapt climate change.

Mendelsohn and Dinar (1999) said that climatic conditions have relatively smaller impact on farmers’ income.

Reidsma *et al.* (2007a) reported that climate influences crop yields, but has no direct influence on farmers' income. Poor communities often face greater levels of risk than more affluent populations.

Kuriakose *et al.* (2009) stated that households from higher wealth tiers exhibit resilience in that they are better positioned to effectively absorb and recover from losses induced by shock such as disaster or illness.

Kimani and Bhardwaj (2015) found that there is a positive relationship between farmers' adaptation to climate change and variability and off and on farm incomes, meaning a higher level of adaptation with increased income.

2.2.2.5. Farming Experience

Farm experience shows the total number of years that a farmer has spent making decisions about farming. A farmer is better informed about the changes in temperature and precipitation if farming experience is high. Farming experience helps in employing adaptation measures to reduce the negative effects of climate change on agricultural activities (Javed *et al.*, 2015).

Kimani and Bhardwaj (2015) identified that farmers' adaptation to climate change and variability is contingent upon years of farming and the adaptation increases with increase in farming experience.

Ifeanyi-Obi *et al.* (2017) found that majority (81%) of the farmers in the study area, have spent more than ten years in farming.

2.2.2.6. Socio-political participation

Awareness raising, extension, outreach, community meetings, and other educational programs are important for disseminating knowledge about adaptation options as well as for helping to build social capital that is critical for social resilience (Wolf *et al.*, 2010).

According to Defiesta and Ropera (2014), affiliations to social groups provide farmers access to useful information for climate change adaptation that may be exclusively available only to group members.

Javed *et al.* (2015) contended that different socio-economic endowments, social interactions and exposure to source of information may shape significant differences in climate change perceptions and the corresponding adaptation strategies of the farmer(s).

2.2.2.7. Mass media exposure

Mass media are useful in providing and disseminating agricultural information, to a wide audience at a very fast rate.

Kandlinkar and Risbey (2000) reported that media played an important role in informing livestock farmers about climate change as this has increased the tendency of adapting to climate change.

According to Adger *et al.* (2004), the capacity to adapt to climate change in an anticipatory manner will depend strongly on the availability of information relating to climate change, and on the ability of those undertaking adaptation to interpret this information.

Lwoga (2010) found that there was low use of internet for knowledge acquisition, while cell phones were becoming popular for farmers to communicate with telecenter operators and rural radio in case of emergency or advice regarding farming activities.

Defiesta, and Ropera (2014) found that the most common sources of climate information among farmers are television (79%) and radio (39%).

Vani and Kumar (2016) reported that among the sources of awareness about climate change, media was the main source of transfer of technical information among farmers.

Ifeanyi-Obi *et al.* (2017) revealed that the farmers in Southeast Nigeria accessed climate change information through their personal experience (64%), radio (42%) and fellow villagers (39%).

Mass media play an important role in providing information to the rural community enabling them to get information regarding farming activities, especially in the rural areas.

2.2.2.8. Self confidence

Within organic agriculture, the use of locally available inputs is encouraged. The effect on the local community of such a form of agriculture is, therefore, likely to be greater than when inputs are imported from outside the community. Self confidence refers to the extent of feeling of a farmer about his own powers, abilities and resourcefulness to perform any activity which he desires to undertake.

Confidence is an attitude, frequently related to repeated experiences and to the realistic perception of individual weaknesses and potentials. Individuals with a greater sense of self-efficacy or self-confidence are more willing to accept challenges and recover faster from failure (Martins *et al.*, 2014).

2.2.2.9. Closeness with agricultural support system

Access to extension services had a strong and positive influence on adaptation to climate change (Hassan and Nhemachenan (2008), Bryan *et al.*, (2009) and Deressa *et al.*, (2010).

Mandleni and Anim (2011) suggested that there is a need to provide timely and appropriate information on climate change through extension programmes.

Oduniyi (2013) stated that agricultural extension officers can play an important role in educating the farmers about climate change, mitigation and adaptation.

According to Sarkar and Padaria (2015), successful adaptation depends on the scientific knowledge level of farmers and formulation of suitable extension strategies. With changing climatic conditions, the role of extension also needs to be redefined.

Agricultural extension services play a significant role for transfer of appropriate technologies and information to farmers. Therefore, extension services help farmers to understand the strategies and educate them the technologies to adjust with the impacts of climatic variability and change.

2.2.2.10. Farming commitment

Farming commitment is the degree of undertaking additional efforts, sacrificing personal matters to accomplish farming objectives. Even if there are adverse climatic conditions or climatic variability, the farmers with higher commitment to farming will continue the cultivation of crops by adopting suitable practices to overcome the climatic stresses.

Eyhorn (2007) stated that the long-term sustainability of the undertaking can be ensured, only if the involved farmers develop emotional ownership and an identity as a group.

The study conducted by Bijman and Verhees (2011), among Dutch animal farmers found that farmers' commitment to their feed supplier is affected by market positioning, customer relationships, cooperative characteristics and social network.

2.3. Concept of Inventorisation of certified organic farmers

Accredited certification agency is an agency accredited by National Accreditation Body under National Programme on Organic Production (NPOP) for certification of organic production system.

In India almost 5.3 lakh hectares of land is under organic cultivation, which is 0.3% of the total agricultural land. Sikkim has become the first Indian state to go wholly organic; nearly 67 per cent of the population is engaged in organic farming on 50,000 hectares of land (Guar, 2016).

There is a positive trend in organic farming worldwide: Consumer demand is increasing; reflected in the significant market growth of 11 percent in the United States, the world's largest organic market. More farmers cultivate organically, more land is certified organic and 179 countries report organic farming activities. A total of 50.9 million hectares were organically managed at the end of 2015, representing a growth of 6.5 million hectares over 2014, the largest growth ever recorded. Australia is the country with the largest organic agricultural area (22.7 million hectares), followed by Argentina (3.1 million hectares), and the United States of America (2 million hectares). Ten percent or more of the farmland is organic in eleven countries. In addition, a huge number of uncertified farms apply organic agriculture practices for their own subsistence purposes.

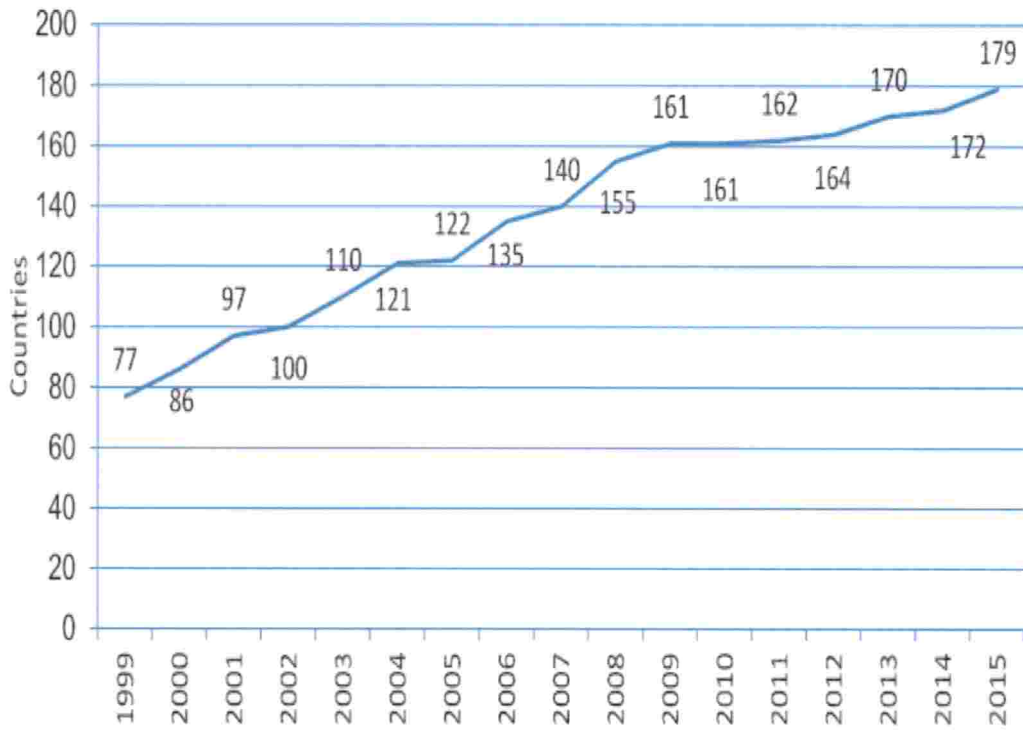


Figure 16: Development of the number of countries with data on organic agriculture 1999-2015

(Source: FiBL-IFOAM-SOEL surveys 1999-2017)

According to the FiBL survey on certified organic agriculture worldwide 2015, data on organic agriculture was available from 179 countries (Fig.16), while data was available from 172 countries in 2014. Organic agriculture is practiced in almost 130 countries in the world. Almost 35 million hectares of agricultural land are managed organically by almost 1.4 million producers. The regions with the largest areas of organically managed agricultural land are Oceania (12.1 million hectares), Europe (8.2 million hectares) and Latin America (8.1 million hectares). The countries with the most organic agricultural land are Australia, Argentina and China (Willer and Lernoud, 2017).

Indian Organic Certification Agency (INDOCERT) is a nationally and internationally operating, certification body established in India. It is accredited by National Accreditation Body (NAB), Government of India, as per National Programme for Organic Production (NPOP). Furthermore, INDOCERT offers Organic certification as per USDA-NOP standards for products destined for export to the United States.

Lacon Quality Certification (India) Pvt. Ltd., a subsidiary of LACON GmbH, Germany, offers a wide range of certification services for agriculture and food production sectors. The main areas of services are inspection and certification of: organic production; processing and handling of agricultural produces; export and import of such products as per the relevant national rules and Certification for International Featured Standards (IFS).

2.4. Review of research studies in relation to organic farming and climate change adaptation.

There are many studies revealing the potential of organic farming for reducing green house gases release to atmosphere through carbon sequestration and thereby contributing to climate change adaptation. Sustainable agriculture is the successful management of resources to satisfy

changing human needs by conserving natural resources ensuring quality of environment. Organic agriculture, when practiced responsibly, can help alleviate environmental stresses and contribute to the healing of the earth. Therefore, it is high time for a paradigm shift.

Due to its emphasis on healthy soil structure, organic farming avoids many of the problems associated with compaction, erosion, salinization and soil degradation, which are prevalent in intensive systems. Organic manures and green mulches are applied even before the crop is sown, leading to a process known as ‘mineralization’ – literally the fixing of minerals in the soil. Mineralized organic matter, conspicuously absent from synthetic fertilizers, is one of the essential ingredients required physically and chemically to hold water on the land (Lampkin, 1990).

According to Pfiffner and Mader (1997) soil aggregate stability strongly correlated to earthworm and microbial biomass were more abundant in the organic fields than in the conventional ones with positive effects on soil structure, water infiltration, drainage, water-holding capacity and soil aeration.

Abstention from all chemical pesticides avoids the risk of health damage by chemicals for farmers and consumers. Water quality is increased both by lower nitrate leaching and abstention from agro-chemicals (Stolze *et al.*, 2000).

It is true that farmers converting to organic production often encounter lower yields in the first few years, as the soil and surrounding biodiversity recover from years of assault with chemicals and it may take several seasons for farmers to refine the new approach (Halweil, 2006).

The goal of achieving a sustainable planet, one that will accommodate the basic needs of its present inhabitants while preserving the resources that

will enable future generations to flourish, has gained increasing acceptance (Gold, 2007).

Many field trials worldwide showed that organic fertilization compared to mineral fertilization is increasing soil organic carbon and thus, sequestering large amounts of CO₂ from the atmosphere to the soil. The FAO regards organic agriculture as an effective strategy for mitigating climate change and building robust soils that are better adapted to extreme weather conditions associated with climate change. Lower greenhouse gas emissions for crop production and enhanced carbon sequestration, coupled with additional benefits of biodiversity and other environmental services, makes organic agriculture a farming method with many advantages and considerable potential for mitigating and adapting to climate change. Organic agriculture optimally combines different practices in a systematic manner and sustains agricultural production in resource-limited regions. Conversion of global agriculture to organic management, without converting wild lands to agriculture and using fertilizers, would result in a global agricultural supply of 2640 to 4380 kcal/ person/day (FAO, 2007).

Organic agriculture is claimed to be the most sustainable approach in food production. It emphasizes recycling techniques and low external input and high output strategies. It is based on enhancing soil fertility and diversity at all levels and makes soils less susceptible to erosion (Niggli *et al.*, 2007).

As organic farming does not use mineral fertilizers, which are produced using fossil fuel, it is a positive contributor even though it mostly leads to lower yields. Substituting fossil fuels by bio-fuel is a good option as it offers indefinite positive contribution, as long as the direct and indirect energy input for its production is lower than the energy yield. (Fliessbach, 2007).

Eyhorn (2007) stated that farming is not only a specific agricultural production system, it is also a systemic and encompassing approach to sustainable livelihoods in general, where due account is given to relevant

factors of influence for sustainable development and vulnerability, be this on physical, economic, or socio-cultural levels.

By reviewing the available literature, Wright (2008) indicated that organic or ecological agriculture can achieve significant yield gains over both traditional and industrialized agriculture and especially in resource-poor regions of the world.

Organic agricultural systems are highly resilient systems based on sustainable soil fertility management, on the maintenance of diversity on landscape, farm, field and crop level as well as on a combination of indigenous, locally adapted knowledge with innovative technology and very adaptive to climate change scenarios (Niggli *et al.*, 2008).

Sherief and Sreejith (2009) concluded that the organic system of farming is the most resilient adaptation strategy against climate change and offer greater potential as a sustainable livelihood mechanism in times of climate transition.

The increase of chemical fertilizers contributed substantial amount of GHGs emissions and the organic agriculture could support both GHGs emissions reduction as well as the development of resilient farming systems for adaptation (Khanal, 2009).

The different case studies conducted by International Federation of Organic Agriculture Movements (IFOAM) revealed that organic agriculture can sequester significant levels of carbon dioxide from the atmosphere while providing ecosystem benefits and high crop yields. In addition to affordable carbon sequestration, organic agriculture provides increased food security through more reliable yields, and decreased needs for external inputs. Moreover, organic farming puts people at the centre of the farming system to increase resilience, income, and food security (IFOAM, 2009).

Organic agriculture systems have a strong potential for building resilient food systems in the face of uncertainties, through farm diversification and building soil fertility with organic matter. Certified organic products cater for higher income options for farmers and therefore, can serve as promoters for climate-friendly farming practices worldwide (Scialabba and Muller-Lindenlauf, 2010).

Panneerselvam *et al.* (2011) concluded that conversion to organic farming helps in reducing debts and improving the purchasing power of the farmers without impairing overall food supply and thus leading to improvement in overall food security. The study conducted by Sarker *et al.* (2011) showed that utilizing of capital assets in organic agriculture small farmers in Bangladesh has attained significant livelihood improvement. Kleemann (2011) indicated that organic production is more profitable for smallholders than conventional production and price premiums from the retail level are fully passed on to farmers.

Prolonged use of chemical fertilizers has reduced beneficial micro-organisms in soils, degrading soil integrity and making it more vulnerable to shocks such as extreme weather events (Reynolds and Nierenberg, 2012).

Altieri *et al.* (2012) stated that, climate extremes are becoming more frequent and threaten genetically homogeneous modern monocultures now covering 80 per cent of the 1500 million hectares of global arable land. Moreover, industrial agriculture contributes about 25-30% of GHG emissions, further altering weather patterns thus compromising the world's capacity to produce food in the future.

As per Padel (2013) organic farms are "creative living laboratories", because the restrictions in the standards force them to think outside the box in finding new solutions to common problems.

Wani *et al.* (2013) delineated the following benefits of organic farming: minimizing the use of non-renewable resources, reduce global warming by lowering emission of greenhouse gases hence temperature rise, enhances biological diversity, minimizes environmental pollution, maintains long-term soil fertility, reduces energy loss, for both animal and machine and risk of crop failure, promote the healthy use of soil, water and air, highly adaptive to climatic change due to application of traditional skills, farmers knowledge, soil fertility building techniques and a high degree of diversity.

According to FAO (2013), there is a need to shift away from specialized high-input systems towards the design and adoption of more integrated production systems that will reduce the use of inorganic fertilizer and the resulting GHG emissions.

Anupama (2014) found that organic farming is taken up by majority of the farmers due to the increasing awareness among the consumers on the deleterious effects of pesticides and hence there has been a high demand for organically cultivated food products.

Devakumar and Shankar (2014), said that considering the potential environmental benefits of organic production and its compatibility with integrated agricultural approaches to rural development, organic agriculture may be considered as a development vehicle for developing countries like India in particular.

Iozzi (2016) reported that according to the data collected by the FAO, some 795 million people in the world do not have enough food to lead a healthy active life – about one in nine people on earth and this can be considered as a clear indication that the promotion of industrial agriculture has failed to deliver satisfactory results.

Soil degradation, high pest-disease-weed infestation, more water consumption and non-judicious use of inputs, inadequate price and several natural and manmade issues, the farming turned to be unworthy for farmers. With the increasing awareness about the safety and quality of foods, long term sustainability of the system and accumulating evidences of being equally productive, the organic farming has emerged as an alternative system of farming which not only address the quality and sustainability concerns, but also ensures a debt free, profitable livelihood option. (Maitra and Zaman, 2017).

Ravi (2017) reported that, the organic farming concept is gaining prominence in India not only in the farming community, but also among the city dwellers, as a lot of individuals are venturing into this field. Organic agriculture becomes the preferred land use system in rural areas worldwide (Willer and Lernoud, 2017).

Even though we achieved higher production during the initial periods of green revolution, following a high intensive chemical farming, the production and productivity reduced drastically with abnormal input costs and now, the farming sector turned to be an unfavourable occupation. Under these circumstances, there is a need to search the potential of organic farming since it is emerging in several countries all over the world as an alternate means for sustainable agricultural production.

2.4.1. Summary of research studies relating to organic farming, climate change adaptation and carbon sequestration

An extensive review on the research studies associated with organic farming, carbon sequestration capacity, GHG emission reduction and climate change induced livelihood adaptation had been carried out and is summarised the relevant studies below.

Table: 6. Summary of reviewed research studies relating to organic farming, climate change adaptation and carbon sequestration

Sl. No.	Author and Year	Name of study	Findings
1	Pfiffner and Mader (1997)	Effects of biodynamic, organic and conventional production systems on earthworm populations	Soil aggregate stability strongly correlated to earthworm and microbial biomass were more abundant in the organic fields than in the conventional ones with positive effects on soil structure, water infiltration, drainage, water-holding capacity, and soil aeration.
2	Drinkwater <i>et al.</i> (1998)	Legume-based cropping systems have reduced carbon and nitrogen losses	The study found that levels of carbon in the soils of organic farms in California were as much as 28 per cent higher as a result.
3	Watson <i>et al.</i> (2000)	IPCC Special Report on Land Use, Land Use Change and Forestry	The global carbon sequestration potential by improved pasture management practices was calculated to 0.22 t C per ha per year
4	Mader <i>et al.</i> (2002)	Soil fertility and biodiversity in organic farming	The DOK [(bio-Dynamic (D), bio-Organic (O) and conventional (K)]trial, a long-term Swiss field experiment on loess soil that began in 1978 showed that organic yields were only 20% lower than in conventional. Soil microbial biomass and the physiological functions of soils as well as plant-microbe interactions were enhanced by organic agriculture. The aggregate and percolation stability of both biodynamic and organic plots were significantly higher (10 to 60 %) than conventionally farmed plots. This also affected the water retention potential of these soils in a positive way and reduced their susceptibility to erosion.
5	Pulleman <i>et al.</i> (2003)	Effects of organic versus conventional arable farming on soil structure and organic matter dynamics in a marine loam in the Netherlands	In the Netherlands, an investigation was done on farms that had been under organic and conventional management for 70 years on a polder soil. The percentage of water stable macro-aggregates on organically farmed sites was 72 percent higher compared to conventional. The higher physical stability was linked to significantly increased soil organic matter content and to a larger volume percentage of worm-worked soil (organic 28 percent and conventional 8 percent).
6	Pimentel <i>et al.</i> (2005)	Environmental, energetic, and economic comparisons of	The Rodale farming trial that began in 1981 in Pennsylvania, US, compared manure and legume-based organic agriculture systems to a conventional system based on mineral

		organic and conventional farming systems	fertilizers. While the long-term results show similar soybean and maize yields in organic and conventional systems, soil carbon increased in the organic system. The amount of water percolating through the top 36 cm was 15-20 percent greater in the organic systems indicating an increase in groundwater recharge and reduced runoff. In dry years, the organic plots yielded 28-34 percent more corn and 56-100 more soybean. It was also found that water capture in organic plots was twice as high as in conventional plots during torrential rains.
7	Marriott and Wander (2006)	Total and labile soil organic matter in organic and conventional farming systems	Analyzed soil samples from nine farming system trials that were started in the US between 1981 and 2000. The soil organic carbon concentrations were 14 percent higher in organic systems than in conventional ones. The labile fraction of the soil organic matter – a source of mineralizable C and N with important implications for plant nutrition – showed 30 - 40 percent higher values in organic soils.
8	Teasdale <i>et al.</i> (2007)	Potential long-term of no-tillage benefits and organic cropping systems for grain production and soil	USA field trial carried out over 8 years results found significantly higher concentrations of combustible C in the organic system as compared to the no-till conventional system.
9	Badgley <i>et al.</i> (2007)	Organic agriculture and the global food supply	Conducted a study comparing average organic yields to average conventional yields. They calculated a ratio correlating organic agriculture yields with conventional agriculture yields and then applied it to current data on world food supply. Both developing and developed areas were taken into consideration. Although their results indicated a decline in yield for developed nations where inputs are high (about ninety percent of conventional agriculture yields), their results for developing countries, where current inputs are typically much lower than those of developing nations, suggested a significant increase, in some cases more than fifty percent greater.
10	Eyhorn <i>et al.</i> (2007)	The viability of cotton-based organic agriculture systems in India.	A study of organic cotton production in India found yield levels similar to a modern cultivation technique, soil organic matter, water stable aggregates and mean weight diameter showed advantages for organic.

11	Edwards (2007)	The impact of compost use on crop yields in Tigray, Ethiopia	In the Tigray province of Ethiopia, agricultural productivity was enhanced by compost application and introduction of leguminous plants into the crop sequence. By restoring soil fertility, yields were increased to a much greater extent than by using purchase mineral fertilizers under summer drought conditions
12	Fliessbach <i>et al.</i> (2007)	The role of organic agriculture in climate change – scientific evidence	In US, a 25-year Rodale Institute experiment on climatic extremes found that, due to improved soil structure, organic systems consistently achieve higher yields during periods both of drought and flooding. It had also been reported that shows that if the US were to convert all its corn and soybean fields to organic methods, the amount of carbon that could be stored in the soil would equal 73 per cent of the country's Kyoto targets for CO ₂ reduction. The potential of Organic Agriculture to sequester an equivalent of up to 30% of all annual world greenhouse gas emissions. Organic Agriculture with cover crops, crop rotation, and biological nutrition sources pulls carbon out of the atmosphere and stores it in soils.
13	Ciavatta <i>et al.</i> (2008)	Can organic farming contribute to carbon sequestration? A survey in a pear orchard in Emilia-Romagna region, Italy	18 years field trial in Italy showed that Carbon stocks at the organic orchard 0-15 cm row was 14.9 g C per kg soil while conventional orchard was only 8.1 g C per kg soil
14	Stalenga and Kawalec (2008)	Emissions of greenhouse gases and soil organic matter balance in different farming systems	12 years comparative field trial at Poland, the carbon stock change in organic system was -599 kg C per ha and year where as in conventional in the baseline carbon content of the organic plots was higher. The organic matter balance of 20 organic farms surveyed in the study was positive and higher than in conventional managed farms.
15	Hepperly <i>et al.</i> (2008)	Carbon sequestration in organic maize/soybean cropping systems	Overall energy use was about one third reduced in the two organic systems compared to the conventional system of maize and soybean farming. Organic no-till can substantially reduce energy requirement for maize production. Water stable aggregates in the 1 to 2 mm class were significantly higher in organic systems compared to conventional

			maize/soybean system. Deep core soil analysis demonstrated the ability of organic agricultural systems to accrue soil carbon at significantly deeper soil profile levels, to at least 30 cm has been reported.
16	Tizio <i>et al.</i> (2008)	The effects of system management on soil carbon dynamics. Lucrari Stiintifice	5 years randomized comparative field trial at Italy revealed that the carbon stocks at end of trial at organic minimum tillage was 12.7 g C per kg soil while conventional was 11.8 g C per kg soil.
17	IFOAM (2009)	The contribution of organic agriculture to climate change mitigation	Compost trials in the Egyptian desert showed that organic farming practices - recycling of organic waste to compost and adding to the soil in dry land regions have the potential to mitigate climate change by avoiding emissions and sequestering high levels of carbon.
18	Niggli <i>et al.</i> (2009)	Does organic farming have greater potential to adapt to climate change	Estimated that the global average sequestration potential of organic croplands to be 0.9-2.4 Gt CO ₂ per year, which is equivalent to an average sequestration potential of about 200 to 400 kg C per hectare and year for all croplands.
19	Leifeld and Furher (2010)	Organic Farming and Soil Carbon Sequestration: What Do We Really Know About the Benefits?	A total of 68 data sets were analyzed from 32 peer-reviewed publications aiming to compare conventional with organic farming. The analysis revealed that after conversion, soil C content (SOC) in organic systems increased annually by 2.2% on average, whereas in conventional systems SOC did not change significantly.
20	Scialabba and Muller-Lindenlauf (2010)	Organic agriculture and climate change	An important potential contribution of organically managed systems to climate change mitigation is identified in the careful management of nutrients and, hence, the reduction of N ₂ O emissions from soils. The emission reduction potential by abstention from mineral fertilizers is calculated to be about 20% and the compensation potential by carbon sequestration to be about 40–72% of the world's annual agricultural greenhouse gas (GHG) emissions.

21	Knudsen <i>et al.</i> (2011)	Life cycle assessment of organic food and farming systems: methodological challenges related to greenhouse gas emissions and carbon sequestration	The organic soybeans had a lower environmental impact with regard to non-renewable energy use, global warming, acidification and eutrophication potential per tonne produced compared to the conventional soybeans
22	Muller and Gattinger (2012)	Organic farming practices and climate change adaptation	Datasets from 74 studies from pair wise comparisons of organic vs. nonorganic farming systems were subjected to meta analysis to identify differences in soil organic carbon (SOC). We found significant differences and higher values for organically farmed soils of $0.18 \pm 0.06\%$ points (mean \pm 95% confidence interval) for SOC concentrations, $3.50 \pm 1.08 \text{ Mg C ha}^{-1}$ for stocks, and $0.45 \pm 0.21 \text{ Mg C ha}^{-1} \text{ y}^{-1}$ for sequestration rates compared with nonorganic management
23	DeLonge <i>et al.</i> (2013)	A lifecycle model to evaluate carbon sequestration potential and greenhouse gas dynamics of managed grasslands	The compost amendments could result in significant offsets to greenhouse gas emissions, amounting to over 28 MMg CO ₂ e when scaled to 5% of California rangelands. Applications of composted organic matter to grasslands can contribute to climate change mitigation while sustaining productive lands and reducing waste loads
24	Devakumar <i>et al.</i> (2014)	Microbial analytical studies of traditional organic preparations beejamrutha and jeevamrutha	Liquid Organic preparations contain higher number of bacteria, fungi, actinomycets, N-fixers and P- solubilizers.
25	Hulsbergen and Rahmann (2015)	Climate impacts and sustainability of ecological and conventional operating systems - Investigations in a network of pilot plants	Organic farms compensate for the higher emissions by avoiding losses of soil carbon through land use change and by sequestering more carbon in the soils from which they sourced their feed.

All these studies clearly indicate that organic farming helps to maintain higher soil carbon in organic matter content which can effectively

reduce the carbon emission to the atmosphere. Higher organic matter content in soil can boost soil microbial activities, which will benefit soil conservation and plant growth, leading to sustainable agriculture. Thus it can be concluded that organic agricultural practices show ways of efficient nutrient management, in times of limited resources and can contribute to a more efficient use of nitrogen by planting legumes and catch crops and integrated livestock production.

United States Department of Agriculture (USDA) describes organic farming as a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection.

Organic agriculture as a holistic production management system that avoids use of synthetic/chemical fertilizers, pesticides and genetically modified organisms, minimizes pollution of air, soil and water, and optimizes the health and productivity of interdependent communities of plants, animals and people. The role of organic agriculture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings.

From the reviews, it can be assumed that, organic farming can offer a system that can reduce environmental impacts compared to conventional farming. Therefore, scaling-up of organic farming practices would promote and support climate change adaptation.

2.5. Constraints faced by the farmers in relation to climate change adaptation

Smith *et al.* (2001) said that improving and applying knowledge on the constraints and opportunities for enhancing adaptive capacity is necessary to reduce vulnerabilities associated with climate change.

Jangid *et al.* (2012) reported that, inadequate availability of inputs like vermin-compost, bio-fertilizers and organic manures, lack of skill about improved methods of composting and lack of awareness about the concentration, time and method of biofertilizer application were the major constraints as perceived by the farmers.

According to Fosu-Mensah *et al.* (2012), the main barriers for adaptation to climate change included lack of information on adaptation strategies, poverty, and lack of information about weather.

Muttanna (2013) reported that the constraints experienced by farm women to take up adaptation measures to overcome the ill effects of climate change were, difficult to work in the field due to high temperature, lack of knowledge regarding appropriate adaptation, lack of information about long term climate change, lack of knowledge about post harvest technology, and lack of skill in grading, non-availability of irrigation facilities, lack of credit/loan from the banks, and lack of storage facilities in the village.

Sima *et al.* (2015) found that inadequate agricultural practices, deforestation, poor management (little mechanisation, difficulties in implementing new technologies, poor and arbitrary fertilisation of crops, abandoned or destroyed irrigation and other land improvement systems, etc.) led to the quality degradation of agricultural land and eventually to its abandonment in low-productive regions.

According to Ndamani and Watanabe (2016), the main constraints on adaptation include unpredictability of weather, high farm input cost, lack of access to timely weather information and water resources.

Limantol *et al.* (2016) identified the most urgent needs of farmers for adaption to climatic change as irrigation development (access to water), followed by access to credit and health services.

The key issues emerging in organic farming include yield reduction in conversion to organic farm, soil fertility enhancement, integration of livestock, certification constraints, ecology, marketing and policy support. Organic farming is productive and sustainable, but there is a need for strong support to it in the form of subsidies, agricultural extension services and research (Gaur, 2016)

Ifeanyi-Obi *et al.* (2017) identified eight major challenges faced by cocoyam farmers in adapting to climate change namely: high cost of farm inputs and low soil fertility, land and labour constraints, poor access to information and ineffectiveness of cooperatives, poor access to fund and credit facilities and poor government support, lack of improved varieties of cocoyam, poor value attached to cocoyam, poor infrastructural capacity and technology know-how and transportation constraint.

2.6. Concept of strategies for climate change adaptation

The extent of vulnerability of the farming system depends on exposures to changes in climate and on the ability of the affected system to adapt appropriately. There is a need for the development and assessment of planned adaptation initiatives to help in managing the risks of climate change (Smith *et al.*, 2001).

Smith and Skinner (2002), grouped agricultural adaptation options to four main categories: (1) technological developments (2) government programs and insurance (3) farm production practices and (4) farm financial management.

Lim *et al.* (2004), said that the strategies or the measures for reducing vulnerability and increasing adaptive capacity needs to be monitored and periodically evaluated.

Managed carefully, climate adaptation strategies could have environmental benefits also. The Canadian agricultural sector has identified 96 different adaptation measures, including: change in topography of land, use of artificial systems to improve water use/availability and protect against soil erosion, change farming systems, change timing of farm operations, use of different crop varieties, governmental and institutional policies and programmes and research into new technologies (FAO, 2007).

According to Reidsma *et al.* (2007b) adaptation strategies adopted could be agronomic strategies to increase crop yields as well as economic strategies such as changes in crops and inputs.

Agro-forestry had been recognised as an integrated approach to sustainable land use because of its production and environmental benefit (Nair *et al.*, 2008).

Hepperly *et al.* (2008) said that the ability to address the global needs for greenhouse gas management will not be possible without a coordinated effort in agriculture and food systems.

The impact of climate change in the form of climate variability like floods and droughts adversely affected food and plantation crops to a large

extent and thus there is an urgent need to adapt crop management, crop improvement and crop protection strategies in tune with projected climate change scenarios so as to mitigate the ill effects of weather aberrations and sustain agricultural production in ensuing decades (Rao, *et al.*, 2009).

An effective combination of sustainable agriculture and climate change policies can boost green growth, protect the environment and contribute to the eradication of hunger and poverty (FAO, 2010a).

According to Brooks, *et al.* (2011), adaptation interventions focus on (i) environmental rehabilitation, (ii) measures to make societies and communities more resilient in the face of hazards associated with climate variability (e.g. livelihood diversification), (iii) measures to reduce vulnerability to incremental changes in climate-related risks, climate proofing through incremental modifications to existing plans and by adaptation strategies based on more fundamental changes to the way development is pursued.

Proactive measures for adaptation to climate variability and change can substantially reduce many of the adverse impacts and thus contribute to livelihood security of the vulnerable rural population. Suggested adaptation strategies included system of rice intensification, using temperature tolerant cultivars and using green manures/bio-fertilizers for economizing water and increasing the rice productivity under warmer climate (Geethalakshmi *et al.*, 2011).

The major adaptation strategies identified by Fosu-Mensah *et al.* (2012) included crop diversification, planting of short season varieties, change in crops species and a shift in planting date.

The local knowledge of farmers has been proved very useful and important in enhancing their adaptive capacity and designing climate adaptation policies (Ogalleh *et al.*, 2012).

The careful management of nutrients and carbon sequestration in soils are significant contributors in adaptation and mitigation to climate change and variability in several climate zones and under a wide range of specific local conditions. Organic farming as a systematic approach for sustained biological diversity and climate change adaptation through production management, minimizing energy randomisation of non-renewable resources; and carbon sequestration is a viable alternative (Wani *et al.*, 2013).

Harmer and Rahman (2014) grouped adaptation strategies into: (a) financial adaptations (b) labour adaptations; (c) technology based strategies; (d) land-based strategies; (e) cultural strategies; and (f) support from others.

Introduction of a 'climate-tailored agricultural management' system, preservation of ecologically important biomes, development of water bodies, shifts in cropping pattern and land use and management, diversification of agriculture, conservation of native trees, encouraging crop rotation, use of crop residues and bio-fertilizers, replacement of crops with best adapted or suited crop trait, introduction of new plant variety crops such as paddy, coffee, tea and rubber that absorb less light and can withstand high temperature and water stress, integrated pest management system with stress on bio-pesticide, bio-control agents and organic methods are some of the strategies listed the State Action Plan for Climate Change prepared by Department of Environment and Climate Change (SAPCC, 2014).

Defiesta and Rapera (2014) pointed out that, adaptive capacity of farming households must be increased in order to employ more adaptation

measures by increasing the provision of information, financial, and physical resources by: conducting educational campaign and training on climate change and farming adaptation techniques; support farm organizations in the municipality; making accessible to all farmers the climate and weather information generated by the local agromet station; encouraging farmers to avail of the existing subsidies provided by the government; making credit more accessible to small farmers through small-denominated loans; developing/encouraging effective crop insurance for small-scale farmers.

Irrigation, improved crop varieties, crop diversification, farm diversification, change of planting dates and income generating activities are among the adaptation practices most frequently deployed by farmers (Uddin *et al.*, 2014).

Improved adaptation practices for mitigating climate change impacts on rural farming include use of irrigation facilities, water harvesting, crop diversification, farm diversification, change in cropping pattern, planting time and varieties, etc. Water management practices such as surface irrigation, under- ground water use for irrigation and crop diversification were more options of adaptation practices (Tiwari *et al.*, 2014).

Sarkar and Padaraia (2015) had suggested the following extension strategies to build the resilience of the community: Developing new messages and contents on adaptation practices and their dissemination among the farmers, raising the knowledge level about climate change and its cause and effect relationship with their livelihood, transfer of climate resilient technology at local level, on-farm testing of different climate resilient practices and its validation, using ICT to provide real time information like community radio, mobile based advisory service, capacity building, enterprise diversification, climate education, climate forecasting, creation of community

level social institution to monitor and implement the different adaptation strategies, sensitization campaign for judicious use of natural/community resources, developing social vulnerability index and climate impact models, developing the capacity for extension professionals in disaster risk management, promotion of farmers' best climate resilient practices through field trials and networking and developing local contingency plans.

Ndamani and Watanabe (2016) urged that the Government should boost the capacity of research scientists and agricultural staff to develop and promote appropriate and effective technologies (e.g. drought-tolerant and early maturing crop varieties) to help farmers adapt to the extreme weather events.

According to Rajasekharan and Bhaskaran (2016), an expanded and integrated extension delivery services is required to meet the demands of the different agro ecological situations of Kerala. Agro ecological dimensions at district level need to be integrated in the extension system. They had suggested a framework of Agricultural Extension and Service Delivery Project (ASDP) considering the need for Grama Panchayat level extension system, strengthening of service delivery at both Block and Panchayat levels, social capital development and incorporating innovations with improved technical diagnostic services.

Ifeanyi-Obi *et al.* (2017) stated that there is a need to educate the farmers on the benefits of joining cooperatives thereby pooling their resources together to help in procurement of farm inputs as well as credit facilities that can enable them to adapt more effectively to climate change.

Therefore, it is high time to formulate climate change adaptation strategies to adapt with the deleterious consequences of weather aberrations and sustain crop production under projected climate change scenario.

METHODOLOGY

3. METHODOLOGY

This chapter includes the description of methods and procedures used for conducting the study. In accordance with the objectives of the study the research methodology adopted is presented under the following heads.

3.1. Research design

3.2. Inventorisation of certified organic farmers

3.3. Locale of the study

3.4. Selection of respondents

3.5. Operationalisation and measurements of variables

3.5.1. Dependent variable and its measurement

3.5.2. Independent variables and their measurements

3.6. Agro-ecological profile of the organic and conventional farms

3.7. Methods and tools of data collection

3.8. Conceptual frame work of the study

3.1. Research Design

Research is one of the mechanisms through which knowledge can be generated to inform decisions and actions for improving agricultural productivity (Muhumuza *et al.*, 2011). Research design involves the entire process of planning and carrying out the investigation. In the present study, exploratory research design, which is a mixed method strategy, is adopted. The mixed method research design is a procedure for collecting, analyzing and combining both quantitative and qualitative methods in a single study or a series of studies to understand a research problem (Creswel and Clark, 2011). Combining quantitative and qualitative strategies will provide a comprehensive view of the phenomenon under study. In the exploratory research design, the qualitative data is collected first to explore the phenomenon under study and then the quantitative data are gathered to explain the relationship among elements of the phenomenon explained through qualitative data (Sivakumar *et al.*, 2017).

3.2. Inventorisation of certified organic farmers

One of the objectives of the study was to prepare an inventory of certified organic farmers of Kerala. Organic certification means having the farm and farmer's methods inspected by an organic certifying group to ensure that they comply with the guidelines on organic farming (Farm guide, 2018). Considering the deleterious effects of the use of chemicals in farming several farmers are moving towards organic farming. As the status is changing day by day, the consolidation of the list of organic farmers was found to be a difficult task.

As a part of the study an inventory of certified organic farmers had been prepared and a detailed investigation on the distribution of organic farmers was done for finding out the AEU's having maximum and minimum of certified organic farmers. The problem zones and special areas were eliminated to avoid generalisation of results. The inventory of certified organic farmers of Kerala was prepared by collecting the information from accredited certifying agencies in Kerala such as: Indocert and Lacon. Along with this, the list of PGS (Participatory Guarantee System) certified farmers of Kerala were also collected and included in the inventory.

Locale of the Study

The study had been conducted in the selected agro-ecological units of Kerala, based on maximum and minimum number of certified organic farmers (Fig. 17).

3.2.1. Selection of Agro-ecological units

There are 13 Agro-Ecological Zones (AEZ) and 23 Agro-Ecological Units (AEU) in Kerala, classified based on climate and soil characteristics by Kerala State Planning Board. An AEU is a homogeneous geographical area which has the production environment in terms of agro-climate, resource endowments and homogenous socio-economic conditions where majority of the farmers have similar production constraints and research needs (Rajasekharan and Bhaskaran, 2016).

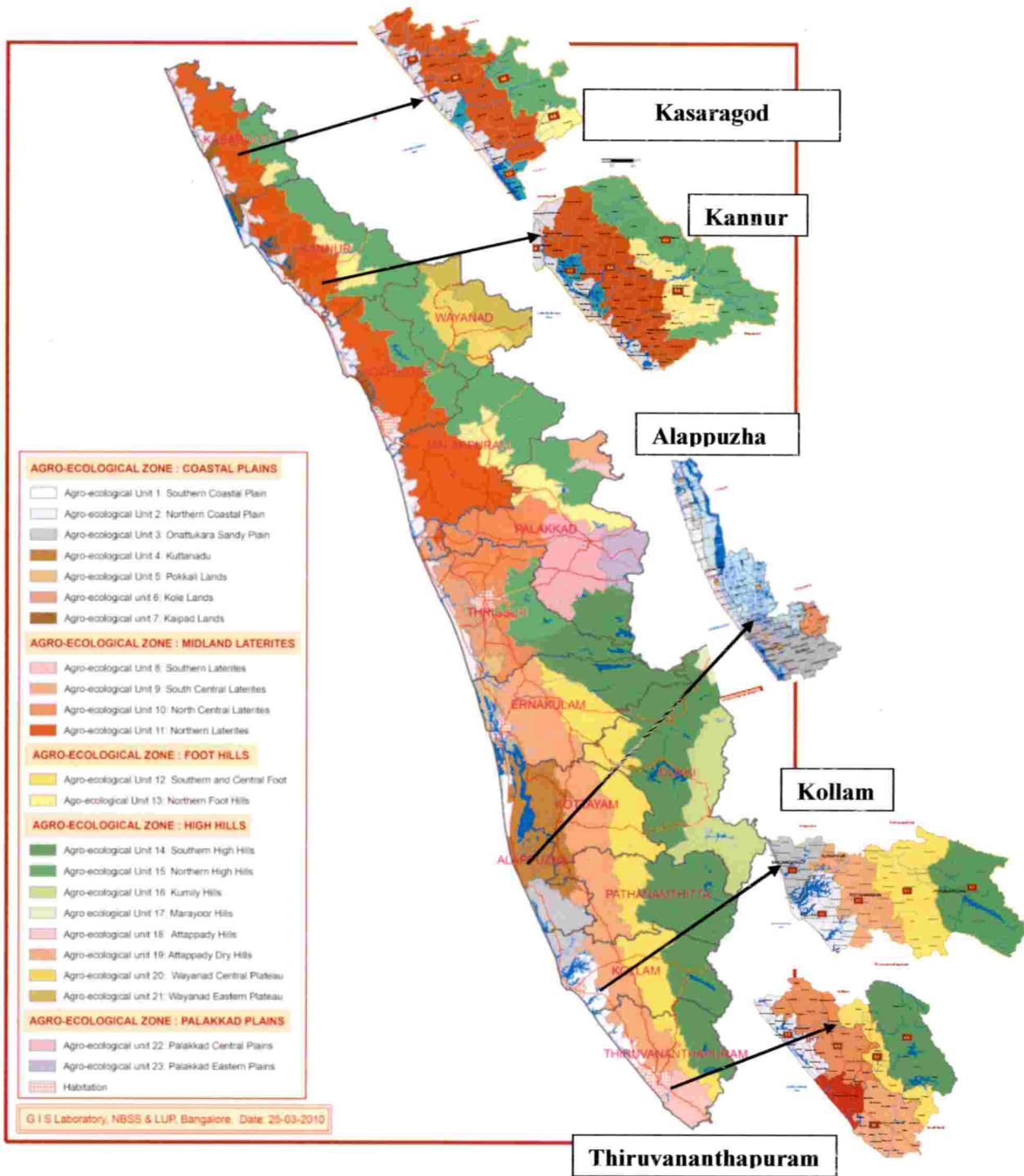


Fig. 17. Map of the study area.

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Table: 7. Agro- Ecological Units of Kerala

AEU No.	Name	Districts
1	Southern coastal plain	Thiruvananthapuram, Kollam, Alappuzha,
2	Northern coastal plain	Thrissur, Malappuram, Kozhikkod, Kannur, Kasaragod
3	Onattukara sandy plain	Kollam, Alappuzha
4	Kuttanad	Pathanamthitta, Alappuzha
5	Pokkali lands	Alappuzha, Ernakulam, Thrissur
6	Kole lands	Thrissur, Malappuram
7	Kaipad lands	Kozhikkod, Kannur, Kasaragod
8	Southern laterites	Thiruvananthapuram
9	South central laterites	Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, Kottayam, Ernakulam
10	North central laterites	Palakkad
11	Northern laterites	Malappuram, Kozhikkod, Kannur, Kasaragod
12	Southern foothills	Thiruvananthapuram, Kollam, Pathanamthitta, Idukki, Kottayam, Ernakulam
13	Northern foothills	Palakkad, Malappuram, Kannur, Kasaragod
14	Southern high hills	Thiruvananthapuram, Kollam, Pathanamthitta, Idukki, Ernakulam
15	Northern high hills	Thrissur, Palakkad, Malappuram, Wynad, Kozhikkod, Kannur, Kasaragod
16	Kumily hills	Idukki
17	Marayur hills	Idukki
18	Attappady hills	Palakkad
19	Attappady dry hills	Palakkad
20	Wayanad Central plain	Wynad
21	Wayanad Eastern plain	Wynad
22	Palakkad Central plain	Palakkad
23	Palakkad Eastern plain	Palakkad

Source: Kerala State Planning board

Hence, the selected agro ecological units with maximum number of certified organic farmers include: AEU9 - South central laterites, AEU11- Northern laterites and minimum number of certified organic farmers AEU 1- Southern coastal plain and AEU13- Northern foot hills.

3.2.2. Description about the Study Area

Based on the distribution of certified organic farmers, the agro-ecological units having maximum and minimum number of certified organic farmers, selected for the study included: AEU9 - South central laterites, AEU11- Northern laterites, AEU 1- Southern coastal plain and AEU13- Northern foot hills.

3.2.2.1. AEU 1 - Southern coastal plain

This unit comprises coastal plains adjacent to coast line, of Thiruvananthapuram, Kollam and Alappuzha districts. The climate is mostly moist sub-humid tropical monsoon type with mean annual rainfall of 2000 mm. Soil moisture availability is adequate for plant growth from May to end of December. Dry period is four months. Soils are deep, acidic and sandy with lateritic soils extend very near to beach in some parts. The dominate land use is coconut plantations inter-cropped to a variety of perennial and annual crops (Fig. 18, 19 and 20).

3.2.2.2. AEU 9 - South central laterites

This unit covers the midland laterites of Thiruvananthapuram, Kollam, Alappuzha, Pathanamthitta, Kottayam and Ernakulam districts. Climate is moist sub-humid tropical monsoon type with mean annual precipitation of 3000 mm. Soil moisture availability is adequate from mid April to mid January of subsequent year. The dry period is three months. Soils are deep, strongly acid, red loamy whereas in the other parts it is deep, strongly acid, red, very gravelly clay. Land use is dominantly coconut and rubber plantations. In the narrow valleys the farmers are cultivating rice, banana, tapioca and vegetables (Fig. 18, 19 and 20).

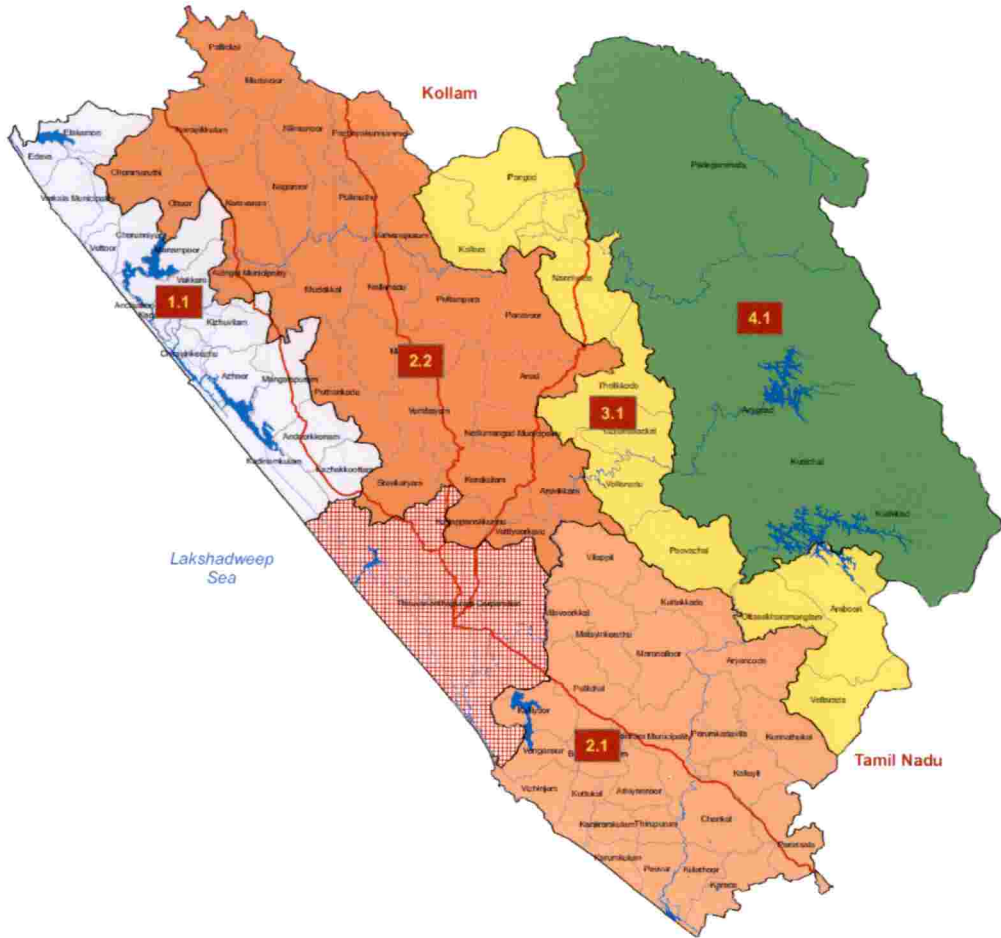


Fig. 18. Thiruvananthapuram District- Agro - Ecological Units

(Source: G I S Laboratory, NBSS & LUP, Bangalore)

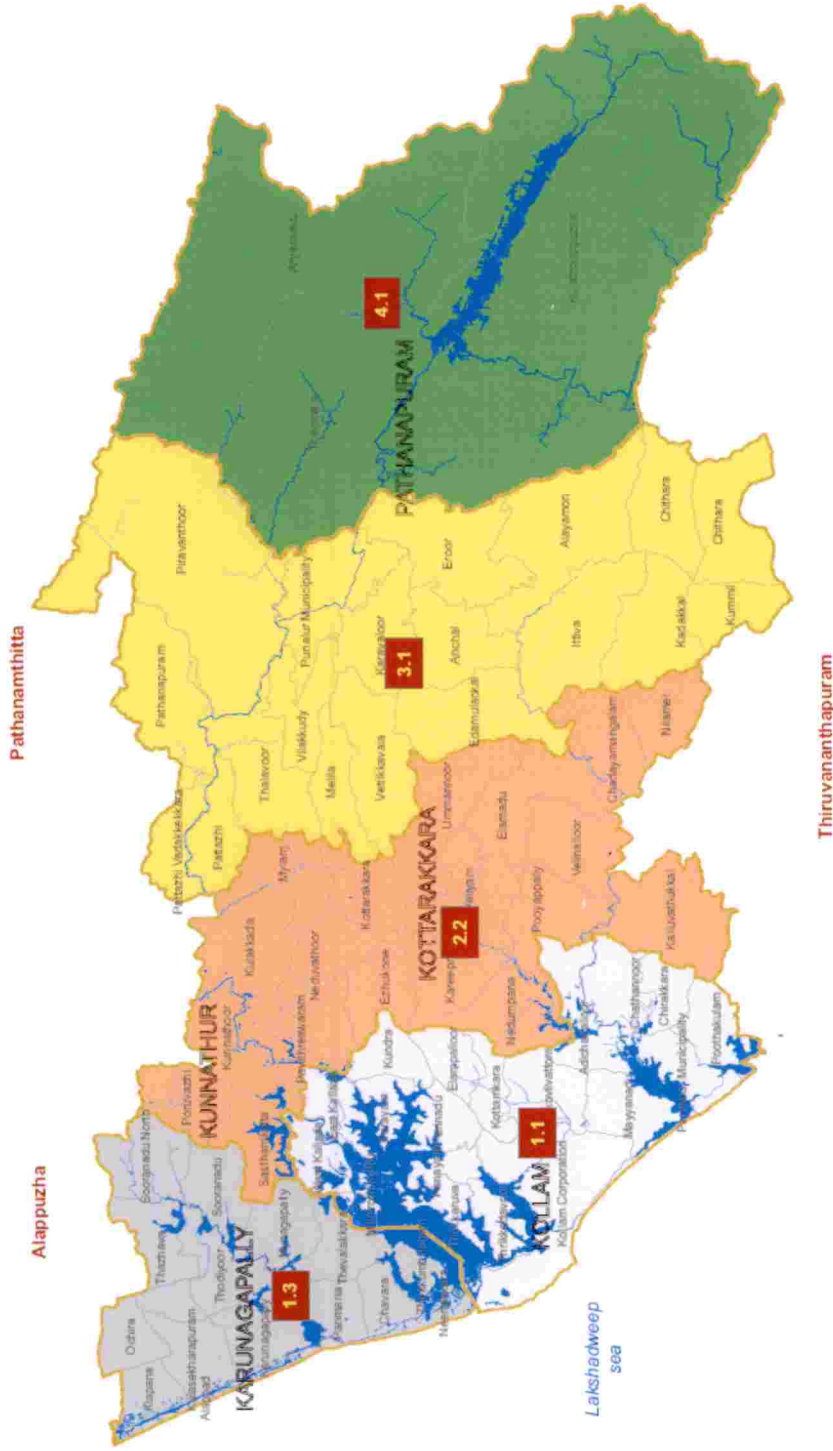


Fig. 19. Kollam District- Agro - Ecological Units
(Source: G I S Laboratory, NBSS & LUP, Bangalore)

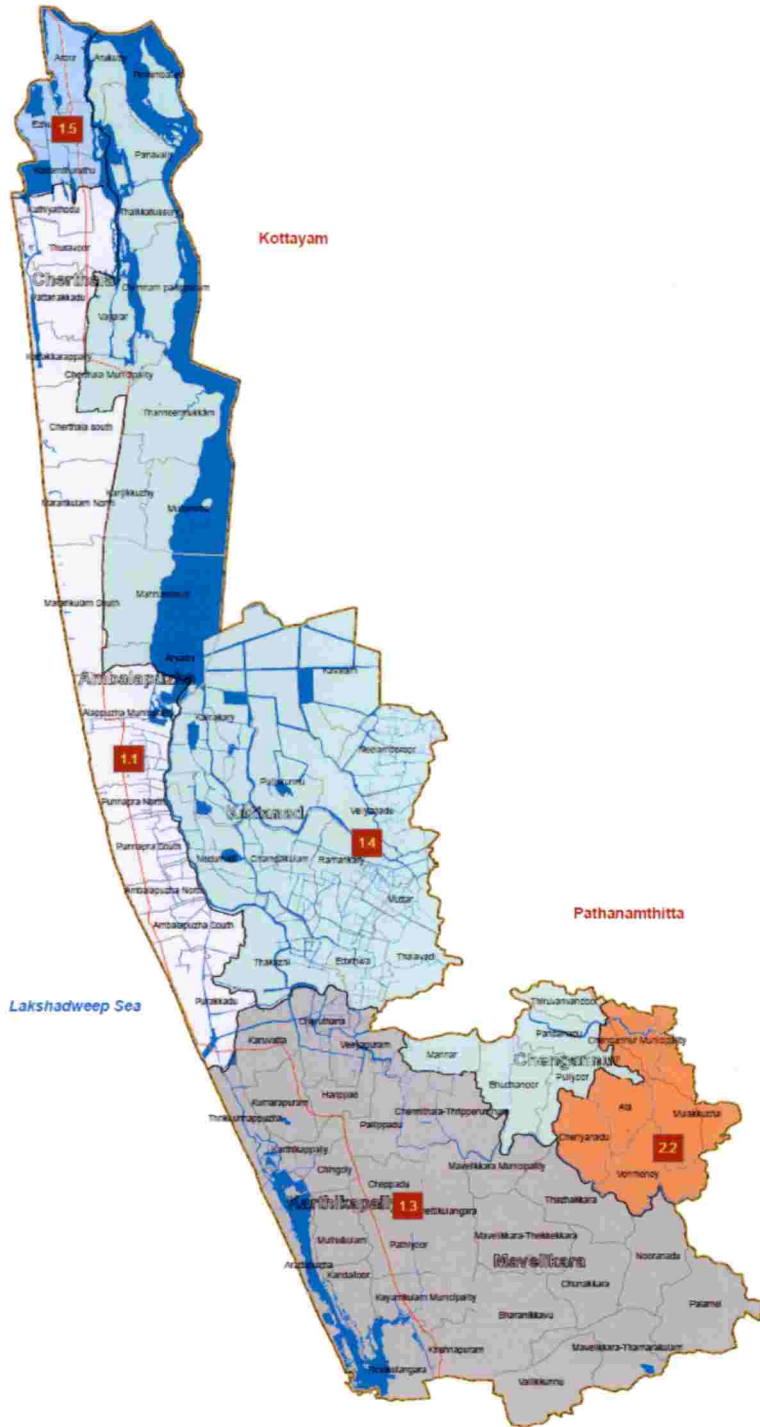


Fig. 20. Alappuzha District- Agro - Ecological Units
(Source: G I S Laboratory, NBSS & LUP, Bangalore)

3.2.2.3. AEU 11 - Northern laterites

This unit covers the midland laterites in the Malappuram, Kozhikkode, Kannur and Kasaragod districts. Climate varies from per-humid tropical monsoon type with mean annual rainfall of 3500 mm. Soil moisture is adequate for crop growth from April to mid December. Dry period is five and half months. Soils are moderately deep to deep, strongly acid, red, very gravelly clay. Laterite outcrops (rock formation that is visible on the surface) and areas with shallow soil cover are extensive in the unit. Such areas are often barren with scanty vegetation cover. The slopes of the rolling lands are cultivated with coconut and cashew with many intercrops. The valleys have rice and areca nut as major crops (Fig. 21 and 22).

3.2.2.4. AEU 13 - Northern foot hills

This unit covers the foot hills in the Palakkad, Malappuram, Kannur and Kasaragod districts. Climate is per-humid tropical monsoon type with mean annual rainfall of 4000 mm. Soil moisture is adequate from April to mid December. The Dry period is five and half months. Soils are deep, strongly acid, gravelly clay. Dominant crop production system in the sloping uplands includes coconut, rubber and pepper. The low lands have rice, arecanut, banana and vegetables (Fig. 21 and 22).

3.3. Selection of the Respondents

The respondents were selected from the two AEUs having maximum and two AEUs, with minimum number of certified organic farmers using purposive random sampling method. 25 respondents each from organic and conventional group were selected from the agro-ecological units having maximum number of certified organic farmers, namely, AEU9 - South central laterites and AEU11- Northern laterites. For the agro-ecological units having minimum number of certified organic farmers, 13 respondents each from organic and conventional group selected from AEU 1- Southern coastal plain and 12 respondents each from AEU13- Northern foot hills. Thus a total of 150 farmers, 75 organic and 75 conventional, were selected randomly from the four AEUs.

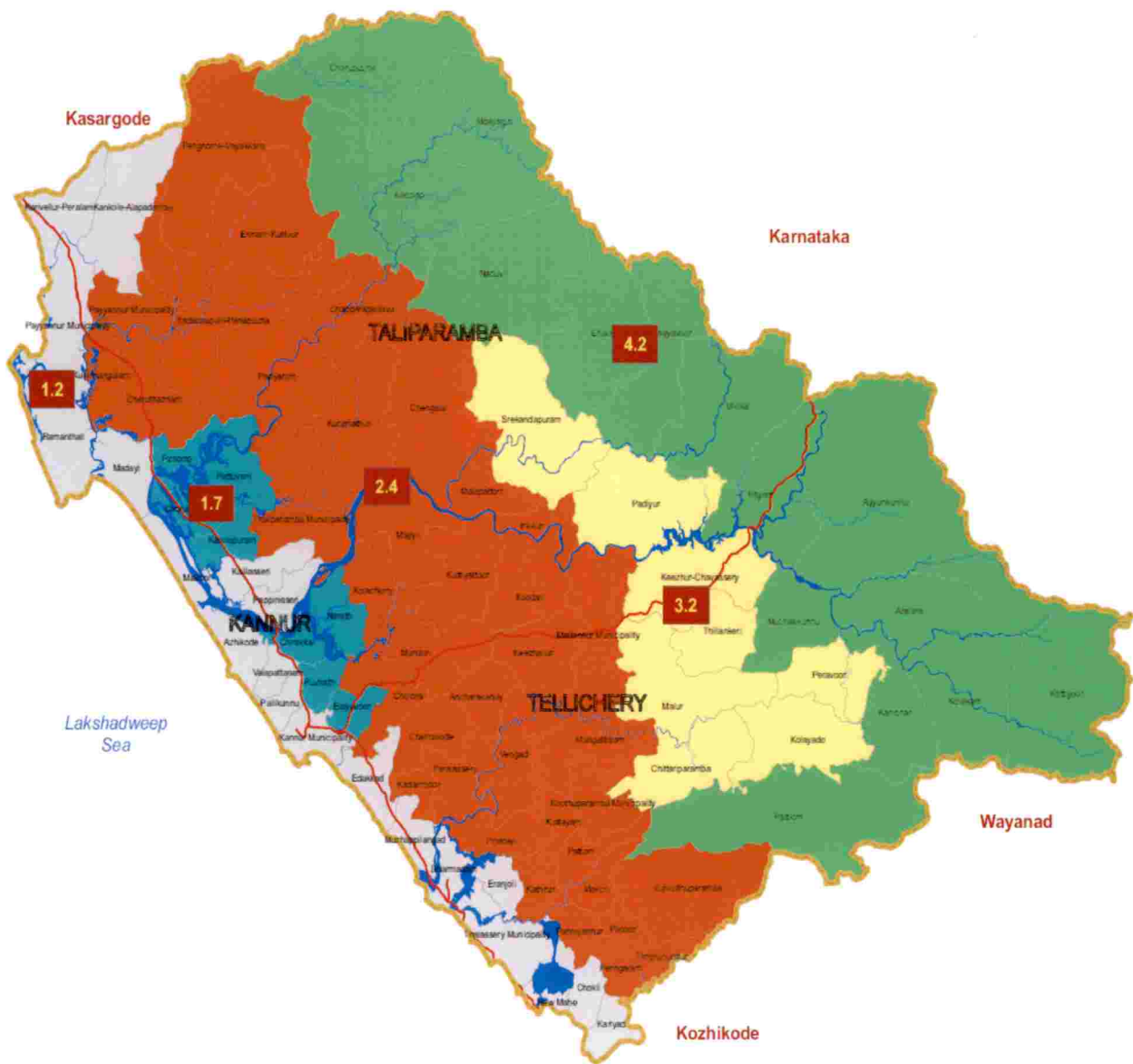


Fig. 21. Kannur District- Agro - Ecological Units

(Source: GIS Laboratory, NBSS & LUP, Bangalore)

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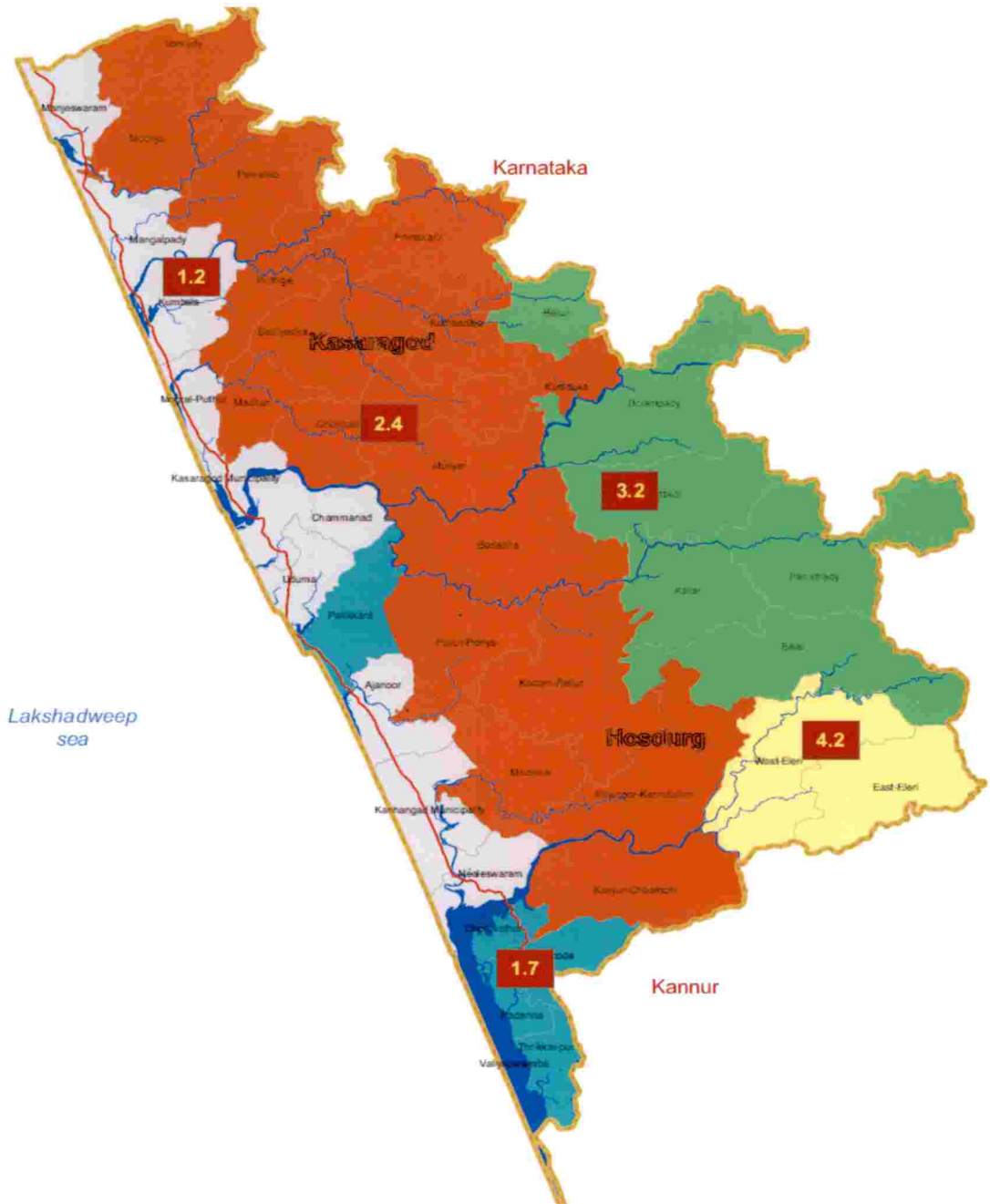


Fig. 22. Kasaragod District- Agro - Ecological Units

(Source: GIS Laboratory, NBSS & LUP, Bangalore)

Table: 8. Selection of respondents

AEU no.	AEU Name	Panchayath	District	No. of certified organic farmers	No. Of respondents	
					Organic	Conventional
1	Southern Coastal Plain	Kazhakkootam	Thiruvananthapuram	52	13	13
9	South Central Laterites	Vamanapuram, Kottarakkara, Venmony	Thiruvananthapuram, Kollam, Alappuzha	174	25	25
11	Northern Laterites	Thaliparamba, Kuthuparamba, Kodom Belur	Kannur, Kasaragod	186	25	25
13	Northern Foot Hills	Balal, Panathadi	Kasaragod	65	12	12
			Total		75	75

The 'certified organic farmer' is operationally defined as the farmer who is cultivating and producing safe to eat agricultural products, without using harmful chemicals in any stage of crop production. The conventional farmer in this study is operationally defined as the farmer who is cultivating crops using chemicals, pesticides and other synthetic materials.

3.5. Operationalisation and measurement of variables

Operationalising involves the specifying of how theoretical concepts will be measured. Based on the objectives, review of literature, discussion with experts and interpretations of the researcher, the Integrated Adaptive Capacity was taken as the dependent variable. For selecting the independent variables a list of 35 profile characteristics were given for judges rating and 10 of them were selected based on mean relevancy score.

3.5.1. Dependent variable and its measurement

As the direct assessment of adaptive capacity was not possible, an index based frame work was adopted for measuring the adaptive capacity in this study. The index based approach is the one in which the selection of factors/ indicators of adaptive capacity were done, quantified and then the overall index was calculated. Hence, a measurement framework had been developed for determining

the integrated adaptive capacity index, based on which comparison of organic and conventional farming had been undertaken. A framework for understanding and assessing adaptive capacity serve as a platform to monitor progress, identify needs and allocate development resources to enhance a system's ability to adapt to change (Jones *et al.*, 2010).

To assess the integrated adaptive capacity in a quantitative manner, the first step was to identify the factors contributing to it. Considering the multifaceted nature of integrated adaptive capacity, a set of key factors and the possible indicators of each factor which reduce the negative outcomes of climate variability / change, were identified, through review of related studies, discussion with experts and interpretation of the researcher. It was then given to expertise in this field for rating the relevancy of each factor and contributing indicators. The results obtained were scrutinised and finally, the bio-physical, agricultural, ecological, socio-economic, technological and managerial factors and corresponding indicators were selected for measuring the Integrative Adaptive Capacity. The responses were collected from the farmers for scoring and calculating the integrated adaptive capacity.

Hence the Integrative Adaptive Capacity, in this study was operationally defined as the potential of a farmer to cope with the adverse effects of climate change by adjustments in the bio-physical, agricultural, ecological, socio-economic, technological and managerial systems leading to sustainable livelihood.

The factors and indicators of Integrative Adaptive Capacity Index selected are presented below:

Table: 9. Factors and indicators of Integrated Adaptive Capacity Index

Factors	Indicators
3.5.1.1.BIO-PHYSICAL	<i>i. Vulnerability of the location</i>
	<i>ii. Sustainable water resources</i>
	<i>iii. Water holding capacity</i>
	<i>iv. Crop suitability</i>
	<i>v. Sustainable soil fertility</i>
	<i>vi. Crop production potential</i>
	<i>vii. Availability of inputs</i>
	<i>viii. Pest and disease incidence</i>
	<i>ix. Ownership of farm implements/ machines</i>
	<i>x. Fallowing due to climatic stresses</i>
3.5.1.2. AGRICULTURAL	<i>*Climate friendly agricultural practices</i>

3.5.1.3. ECOLOGICAL	<i>i. Conservation of Biodiversity</i>
	<i>ii. Integration of agro-forestry</i>
	<i>iii. Farming with minimum pollution</i>
	<i>iv. Presence of beneficial organisms</i>
	<i>v. Avoiding the use of chemicals</i>
	<i>vi. Sustainable waste management</i>
	<i>vii. Recycling and reuse of resources</i>
	<i>viii. Local resource utilization</i>
	<i>ix. Effective utilization of solar energy</i>
	<i>x. Conservation of natural vegetation</i>
3.5.1.4. SOCIO-ECONOMIC	<i>i. Access to basic services</i>
	<i>ii. Sustainable income generation</i>
	<i>iii. Diversified sources of income</i>
	<i>iv. Knowledge sharing with fellow farmers</i>
	<i>v. Opportunity for lifelong learning</i>
	<i>vi. Credit access</i>
	<i>vii. Crop insurance</i>
	<i>viii. Utilization of family labor</i>
	<i>ix. Marketing of farm produces</i>
	<i>x. Financial improvement through farming</i>
3.5.1.5. TECHNOLOGICAL	<i>i. Utilization of weather information</i>
	<i>ii. Awareness about climate change</i>
	<i>iii. Use of micro irrigation</i>
	<i>iv. Adoption of innovative technologies</i>
	<i>v. Use of water harvesting / recharging structures</i>
	<i>vi. Farm mechanization</i>
	<i>vii. ITK related to climate change adaptation</i>
	<i>viii. Preservation of genetic resources</i>
	<i>ix. Utilization of trainings, seminars, internet sources, etc</i>
	<i>x. Keeping a record of agricultural information</i>
3.5.1.6. MANAGERIAL	<i>i. Planning</i>
	<i>ii. Timely decision making</i>
	<i>iii. Financial management</i>
	<i>iv. Labour management</i>
	<i>v. Farm supervision</i>
	<i>vi. Preparing calendar of operations</i>
	<i>vii. Crop surveillance</i>
	<i>viii. Information management</i>
	<i>ix. Effective harvesting & post harvesting</i>
	<i>x. Marketing management</i>

* The selected climate friendly agricultural practices are listed in Table 3.5 under 3.5.1.2.

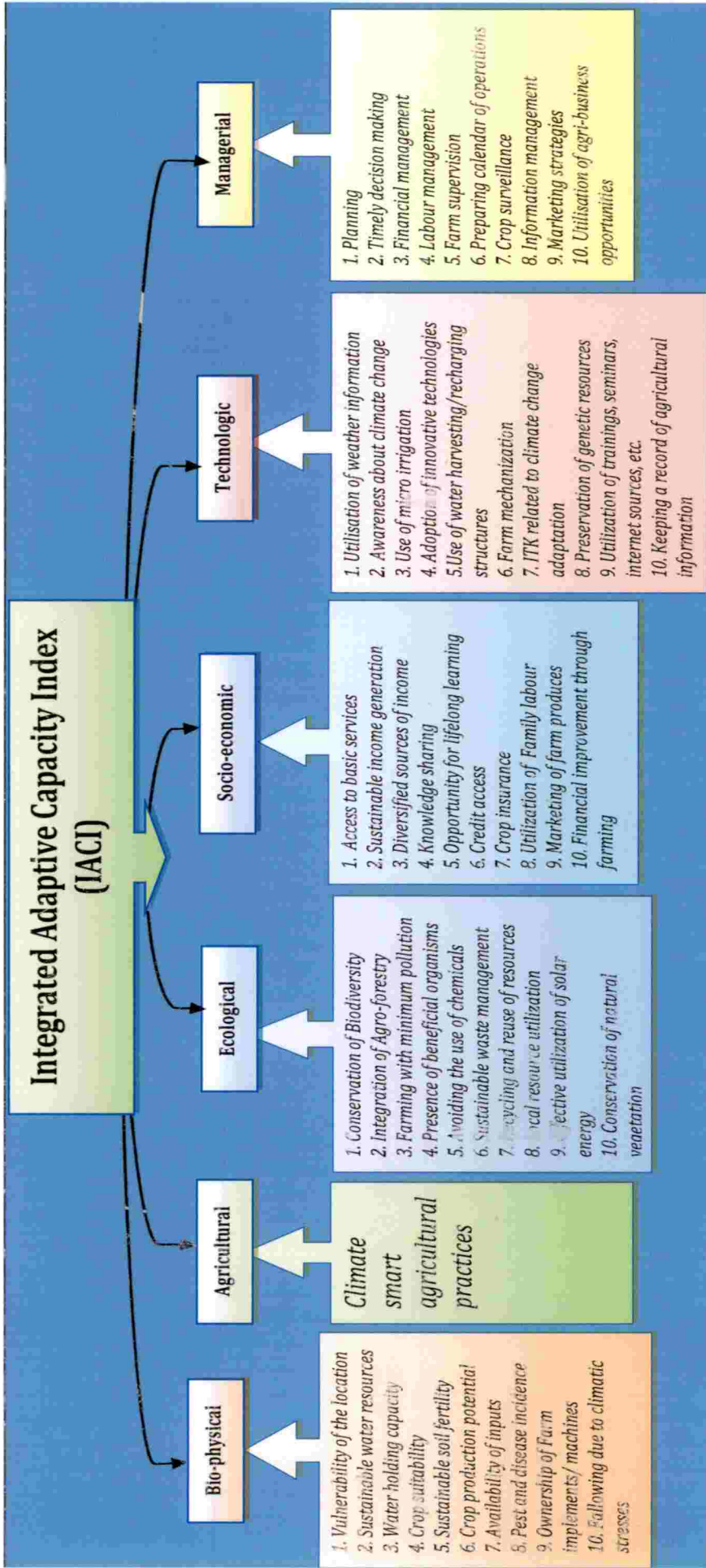


Fig. 23. Factors and indicators of Integrated Adaptive Capacity Index

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Each of the selected factors was measured by adding the scores obtained for the corresponding indicators. The operational definitions and measurement techniques of the Integrated Adaptive Capacity Index are detailed below.

3.5.1.1. BIO-PHYSICAL

The bio-physical factors are operationally defined as the biological and physical factors / components of the farm contributing to climate change adaptation leading to sustainable agricultural production.

The indicators of Bio-physical factors and their operational definition are as follows:

- i. **Vulnerability of the location:** is operationally defined as the degree to which the location is susceptible to climatic stresses and disturbances.
- ii. **Sustainable water resources:** Any source of water near or around the farm, useful for agricultural purpose with availability of water throughout the year.
- iii. **Water holding capacity:** The capacity of the soil to preserve, conserve and retain moisture by reducing evaporation and percolation loss, for a substantial period of time.
- iv. **Crop suitability:** The extent to which the farm is suitable to raise all types of crop.
- v. **Sustainable soil fertility:** The degree to which the fertility status of the soil is sustained throughout the cropping period.
- vi. **Crop production potential:** The potential of the farm to give a reasonable/ standard yield from the crops cultivated.
- vii. **Availability of inputs:** The degree of availability of inputs required for raising of crops.
- viii. **Pest and disease incidences:** The degree of occurrence of pest and diseases in the field during each cropping season
- ix. **Ownership of farm implements/ machines:** The possession of farm implements and machines required for farming activities by the farmer
- x. **Fallowing due to climate stresses:** practice in which the land is kept without cultivation, due to climatic stresses.

The farmers were asked to indicate their appropriate response for the following:

Table: 10. Statements indicating the Bio-physical factor of IAC Index

Sl. No	Statements	Most often	Often	Someti mes	Never
1	The locality of my farm is vulnerable to climatic variability and extreme climatic events				
2	The soil of my farm is suitable to raise all types of crops.				
3	The water resources available in my farm can sufficiently meet the water requirements throughout the crop growth.				
4	Available water can be retained in the soil for sufficient period of time.				
5	The fertility status of the soil is adequately maintained throughout the crop period				
6	I am getting a reasonable/ standard yield from the crops cultivated				
7	The inputs required for raising of crops are adequately available				
8	Incidents of pests and diseases is very negligible/ can be controlled easily without affecting the yield				
9	I own adequate farm implements/machines suitable for raising crops				
10	My land is kept fallow due to climatic stresses				

Scoring pattern

A total of 10 statements indicating to bio-physical factor, in which the statements 1 and 10 were negative and all others positive, were given to farmers for getting responses. A four point continuum is used namely most often, often, sometimes and never with scores of 3, 2, 1 and 0 respectively for positive statements and the reverse scoring pattern for the negative statements. The score ranged from 0-30 and the scores obtained for each statement were summed up to obtain the individual respondent's overall score for bio-physical factor.

3.5.1.2. AGRICULTURAL

The agronomic/ crop production, protection and management practices / components contributing to climate change adaptation (Climate friendly agricultural practices). The respondents were asked to indicate whether the

following practices are followed in their farm, which are effective for climate change adaptation.

Table: 11. Climate friendly agricultural practices contributing to Agricultural factor of IAC Index

Sl no.	Crop production practices	Crop protection practices	Crop management practices
1	Crop rotation	Use of bio-control agents like: pseudomonas, trichoderma etc.	Changing cropping pattern according to climate change/ variability
2	Application of organic manures/ bio-fertilizers	Conservation of natural enemies	Diversified land use
3	Intercropping/ Mixed farming	Use of traps/ repellents	Selection of healthy planting material
4	Mulching	Hand/mechanical weeding	Use of climate resilient crops/ varieties
5	Legume integration	Use of farmer made preparations from natural ingredients	Soil testing based nutrient management
6	Integrated soil and water conservation measures	Field sanitation	Integration of live stock component
7	Timely Irrigation/ drainage	Soil sterilization / solarisation	Selection of crops according to market demand
8	Soil acidity /pH management- application of soil amendments	Live fencing/ protection wall	Use of alternate means of marketing
9	Raising and incorporation of green manure leaves/ crops	Protected cultivation/ rain shelter	Management of harvest & post harvest handling
10	Summer ploughing	Cover cropping	Processing and value addition

Scoring pattern: A total of 30 climate- friendly agricultural practices were given to the respondents and a score of 1 is given for adoption of each practice and 0 for no adoption, resulting to a score range of 0 - 10 under each set of practice and overall score range of 0-30.

3.5.1.3. ECOLOGICAL

The ecological components/ factors, which help the farmer respondent to cope up with climate change variability for sustaining farming.

The farmers were asked to indicate their appropriate response in the following:

Table: 12. Statements indicating to Ecological factor of IAC Index

Sl. No	Statements	Most often	Oft en	Some times	Ne ver
1	My farm is a rich habitat of different varieties and species of plants, animals, birds and other organisms				
2	In my farm there is integration of agro-forestry				
3	I am particularly careful in undertaking farming with minimum pollution to soil, water and atmosphere				
4	In my farm there is enough population of earthworms, butterflies, honey bees, natural enemies etc.				
5	I am not using any chemicals for farming				
6	I am adopting sustainable waste management measures like bio gas, vermi-composting etc.				
7	I am efficiently utilizing the available resources by recycling and reuse				
8	I am depending on locally available resources and inputs from my farm itself for farming.				
9	The available solar energy is effectively utilized for farming				
10	I am not disturbing the natural vegetation for farming				

Scoring pattern: A four point continuum is used namely most often, often, sometimes and never with scores of 3, 2, 1 and 0 respectively for positive statements and the reverse scoring pattern for the negative statements. The score ranged from 0-30 and the scores obtained for each statement were summed up to obtain the individual respondent's overall score for ecological factor.

3.5.1.4. SOCIO-ECONOMIC

Socio-economic indicator is operationally defined as the social and economic characteristics of the farmer contributing to climate change adaptation. Socio-economic assumptions and indicators

The farmers were asked to indicate their appropriate response for the following:

Table: 13. Statements indicating to Socio-economic factor of IAC Index

Sl. No	Statements	Most often	Often	Some times	Never
1	Basic infrastructure, health and sanitation services are available for me and my family				
2	I am getting year round income from farming				
3	I am getting alternate income from other enterprises also				
4	I am getting opportunities for lifelong learning on farm information				
5	I try to share the knowledge and information related to farming with fellow farmers/ farmer groups				
6	I am able to get credit facilities for farming				
7	I have taken crop insurance policy				
8	My family members are helping in farming activities				
9	I am able to sell my farm produces without much difficulty				
10	I get financial improvement through farming				

Scoring pattern: A four point continuum is used namely most often, often, sometimes and never with scores of 3, 2, 1 and 0 respectively. The score ranged from 0-30 and the scores obtained for each statement were summed up to obtain the individual respondent's overall score for socio-economic factor.

3.5.1.5. TECHNOLOGICAL

Innovative techniques and practices contributing to climate change adaptation process.

The farmers were asked to indicate their appropriate response in the following:

Table: 14. Statements indicating to Technological factor of IAC Index

Sl no.	Statements	Most often	Often	Some times	Never
1	I am utilising weather and climate information systems for farming				
2	I feel that climate change is a reality.				
3	I am using micro irrigation techniques like drip/ sprinkler/ bubbler in my farm				
4	I am keen to adopt innovative farming technologies				
5	I am using rain water harvesting structures/ water recharging measures ensuring effective utilisation of available water				
6	I am using machines for undertaking different farm operations				
7	I am using indigenous technologies related to climate change adaptation				
8	I am preserving different varieties of crops, trying varietal crossing/ plant breeding experiments				
9	I am participating in trainings/ seminars/ exhibitions/ internet for getting knowledge about agricultural technologies.				
10	I am keeping a record of technical knowledge and information for referring as and when required.				

Scoring pattern: A four point continuum is used namely most often, often, sometimes and never with scores of 3, 2, 1 and 0 respectively. The score ranged from 0-30 and the scores obtained for each statement were summed up to obtain the individual respondent's overall score for technological factor.

3.5.1.6. MANAGERIAL

The respondent's ability for ensuring proper execution of farm operations and surveillance against possible damage to crops due to climate variability / change. The farmers were asked to indicate their appropriate response in the following:

Table: 15. Statements indicating to Managerial factor of IAC Index

Sl No:	Statements	Most Often	Often	Sometimes	Never
1	Each farm operations from selection of crops to marketing are undertaken with proper planning and expert consultancy, well in advance				
2	I am good at taking timely decisions.				
3	I estimate the financial requirements and operation wise expenditure of each crop in advance				
4	I am arranging labourers well in advance for timely completion of farming activities				
5	I myself do/ supervise all my farm operations				
6	I prepare calendar of operations for farming and follow it accordingly				
7	I am taking pain to closely watching my field as well as crops and if there is any problem, remedial measures are taken then and there				
8	I am collecting possible information regarding farming and carefully selecting the best				
9	I am adopting different marketing strategies assuring maximum profit				
10	I am utilizing agri-business opportunities				

Scoring pattern: A four point continuum is used namely most often, often, sometimes and never with scores of 3, 2, 1 and 0 respectively. The score ranged from 0-30 and the scores obtained for each statement were summed up to obtain the individual respondent's overall score for managerial factor.

The Integrated Adaptive Capacity (IAC) index was calculated as the composite measure of these six factors. For each dimension, the maximum possible score was 30, so the total possible score was $30 \times 6 = 180$.

$$\text{IAC Index} = \left[\frac{(\text{BP}) + (\text{AG}) + (\text{EC}) + (\text{SE}) + (\text{TC}) + (\text{MG})}{180} \right] \times 100$$

Where as

BP- Bio-Physical score

AG- Agricultural score

EC- Ecological score

SE- Socio- Economic score

TC- Technological score and

MG- Managerial score

3.5.2 Independent variables and their measurements

A detailed investigation on the socio-economic and psychological characteristics of the farmers is essential to get a clear understanding about the background and status of the farmers which will in turn helpful for forming strategies for the development of farming community. A set of 35 profile characteristics were given for judges rating and 10 of them were selected based on mean relevancy score.

Table: 16. The measurement summary of the selected independent variables

Sl. No.	Variables	Measurement procedure adopted
1	Age	Chronological age of respondent
2	Education	Method followed by Anupama (2014)
3	Agricultural land holding	Scoring procedure followed by Jaganathan (2004)
4	Annual Income	Method followed by Rubeena (2015)
5	Farming Experience	Scoring procedure followed by Chinchu (2016)
6	Socio-political participation	Scoring procedure followed by Jaganathan (2004) with slight modification
7	Mass media Exposure	Scoring procedure followed by Hanjabam (2013)
8	Self confidence	Scale developed by Basavanna (1974)
9	Closeness with agrl. support system	Scale developed by Bora (1989)
10	Farming commitment	Scale developed by Ramegowda (1991)

3.5.2. Selection of independent Variables and Their Measurement

3.5.2.1. Age

Age was operationalized as number of calendar years completed by the respondent at the time of investigation. Classification of respondents was done on the basis of census report (2011) Government of India.

Classification of respondents based on age

Sl. No:	Category	Years	Score
1	Young	≤ 35	1
2	Middle aged	36-54	2
3	Old aged	≥ 55	3

3.5.2.2. Education

Education was operationalized as the level of literacy possessed by an individual respondent. Illiterate was an individual who did not know to read and write. Primary school education referred to the formal schooling up to fourth standard. High school education referred to the education from sixth to tenth. Higher secondary school education meant the education from eleventh to plus two levels. Collage education referred to degree diploma after schooling. The scoring procedure followed by Anupama (2014) was used for in this study.

Classification of respondents based on education

Sl. No:	Category	Score
1	Primary school	1
2	High school	2
3	Higher secondary school	3
4	College education	4

3.5.2.3. Agricultural land holding

The agricultural land holding is operationally defined as the number of standard acres possessed by the farmer at the time of enquiry which is under cultivation. The scoring procedure followed by Jaganathan (2004) is used in this study.

Classification of respondents based on agricultural land holding

Sl. No:	Category	Score
1	<1 acre	1
2	1-5 acres	2
3	>5 acres	3

3.5.2.4. Annual Income

Annual income was operationalised as the total income obtained by an individual farmer from farming in one year in rupees. The scoring procedure followed by Rubeena (2015) was adopted. The scoring pattern was as follows:

Classification of respondents based on annual income

Sl. No:	Category	Score
1	25,000 to 50,000	1
2	50,001 to 1,00,000	2
3	>1,00,000	3

3.5.2.5. Farming experience

Farming experience was operationally defined as the respondent's number of completed years of experience in farming. The respondents were asked directly that how many years they were involved in farming. The respondents were grouped into four categories based on the years of experience in farming. The scoring procedure followed by Chinchu (2016) was used in this study.

Classification of respondents based on farming experience

Sl. No:	Experience in years	Score
1	Up to 5	1
2	6-10	2
3	11-25	3
4	More than 25	4

3.5.2.6. Socio-political participation

This refers to the extent and nature of participation of a respondent in various activities of socio-political organizations. This was measured by a scoring procedure followed by Jaganathan (2004) with slight modification. The respondents were asked to state their agreement or disagreement to each of the statements and scores of two and one were assigned for agree and disagree respectively. The responses were summed up to obtain the total score.

Table 17. Statements for measuring Socio-political participation

Sl. No:	Category	Score
1	No involvement in socio-political activities	1
	Involving in socio-political activities	2
2	Without any membership in socio-political organization	1
	Membership in socio-political organization	2
3	Membership in one socio-political organization	1
	Membership in more than one socio-political organization	2
4	Position in the organisation- member only	1
	Position in the organisation- Official position	2

The range of score is 4 - 8. Based on the cumulative frequency of the scores the farmers were classified as high, medium and low levels of socio-political participation

3.5.2.7. Mass media exposure

Mass media exposure is the extent of exposure of respondent to mass media such as Radio, Television, Newspapers, Farm magazines, internet etc. on agriculture and related fields. The scoring procedure followed by Hanjabam (2013), is used in this study for measuring mass media exposure.

The respondents were asked directly the frequency of usage of mass media, as given below:

Sl. No.	Category	Frequency			
		Most often	Often	Sometimes	Never
1	News paper				
2	Radio				
3	Television				
4	Agricultural publications				
5	Agri seminars/ exhibitions				
6	Internet/Social networking				

The scoring procedure: Scores for frequency of usage of different mass media sources were ranging from 4 to 1 for most often, often, sometimes and never, in the order of sequence. The range of score was 6-24. Based on the cumulative frequency of the scores the farmers were classified as high, medium and low levels of mass media exposure.

3.5.2.8. Closeness with Agri support system

It refers to the extent to which the respondent makes contact with the personnel of various agencies and organizations related to agriculture. The scoring procedure developed by Bora (1989) with slight modification was followed to measure this variable, as given below.

Sl. No.	Category	Frequency			
		Most often	Often	Sometimes	Never
1	Agricultural Officer				
2	Agriculture Assistant				
3	KVK				
4	Agricultural University/College/Scientist				
5	VFPCCK				
6	Panchayat				
7	Co-operative society				
8	Input dealers				

The respondents were asked to indicate the extent of contact with each type of agencies on a four-point response category namely most often, often, some times and never with scores of 4, 3, 2, and 1 respectively. The total score of an individual respondent was obtained by adding the score secured in each item. The

range of score was 8-32. Based on the cumulative frequency of the scores the farmers were classified as high, medium and low levels of Media exposure.

3.5.2.9. Self confidence

Self confidence was operationally defined as the extent of feeling about one's own powers, abilities and resourcefulness to perform any activity which he/she desires to undertake.

The scale developed by Basavanna (1974) was used for the study for measuring the self confidence of the respondents. The scale consisted of eight statements. The respondents were asked to state their response on a five point continuum ranging from 'Strongly agree', to 'Strongly disagree' with scores of 5,4,3,2 and 1 respectively for positive statements. The scoring procedure was reversed in the case of negative statements. The total score was obtained by summing of all the scores for each statement.

Table: 18. Statements for measuring Self confidence

Sl No:	Statements	SA	A	UD	DA	SDA
1	I am generally confident of my own abilities.					
2	I feel no obstacles can stop me from achieving my final goal.					
3	I am bothered by inferiority feelings.					
4	I do not have initiative.					
5	I usually work out things for myself rather than to show some one.					
6	I get discouraged easily.					
7	Life is a strain for me in much of the time.					
8	I often find myself worrying about something or other.					

Scoring procedure adopted for measuring self confidence:

Nature of statement	SA	A	UD	DA	SDA
Positive statement	5	4	3	2	1
Negative statement	1	2	3	4	5



The range of score was 8-40. Based on the cumulative frequency of the scores the farmers were classified as high, medium and low levels of self confidence.

3.5.2.10. Farming commitment

Farming commitment was operationally defined as the degree of undertaking additional efforts, sacrificing personal matters to accomplish farming objectives. The scale developed by Ramegowda (1991) was used with slight modifications for measuring farming commitment, in this study. The statements used are given below:

Table: 19. Statements for measuring Farming commitment

Sl No:	Statements	S A	A	UD	DA	SDA
1	I am proud that I am a farmer.					
2	If I were given a job in city, I quit farming					
3	I feel that people simply talk of farming problem and they forget that everything depends on how they manage it.					
4	I am not willing to take a great deal of effort to develop my farm.					
5	I am prepared to face any problem to stay permanently in agriculture.					
6	I wish my children to be govt. employees rather than a farmer like me.					
7	There is not much to be gained by sticking to farming permanently.					
8	For me farming is the best profession, when compared to other occupations.					
9	I continue farming simply as it is not socially respected to sell away my ancestral property.					
10	I believe that agricultural vocation alone pays in long run.					

Scoring procedure of Farming commitment

Nature of statement	SA	A	UD	DA	SDA
Positive statement	5	4	3	2	1
Negative statement	1	2	3	4	5

The range of score was 10-50. Based on the cumulative frequency of the scores the farmers were classified as high, medium and low levels of farming commitment.

3.6. Agro-ecological profile of the organic and conventional farms

The agro ecological profile of the organic and conventional farms recorded through field visit, farmer survey and observation of the researcher. The following selected profile characteristics included: crop diversity, cropping pattern, Diversified land use, live stock component and B:C ratio. The scoring procedure adopted was as follows:

Table: 20. Scoring pattern for Agro-ecological profile

Sl. No.	Farm characteristic	Category	Score
1	Crop diversity	Low	<1
		Medium	1-2
		High	3-5
2	Diversified land use	Low	<1
		Medium	1-2
		High	3-5
3	Live stock component	Low	0-1
		Medium	1-2
		High	3-5
4	Production potential	Low	<1
		Medium	1-2
		High	3-5
5	B:C Ratio	Low	<1
		Medium	1-2
		High	>2

3.7. Methods and tools used for data collection

Considering the scope and objectives of the study, an interview schedule was prepared after perusal of available literature, through consultation with experts in the field of extension education and other related fields. After incorporating their suggestions, a well-structured interview schedule was prepared in English and Malayalam. A pilot study was conducted in non-sample area for pre-testing and suitable modifications were made to finalize the interview

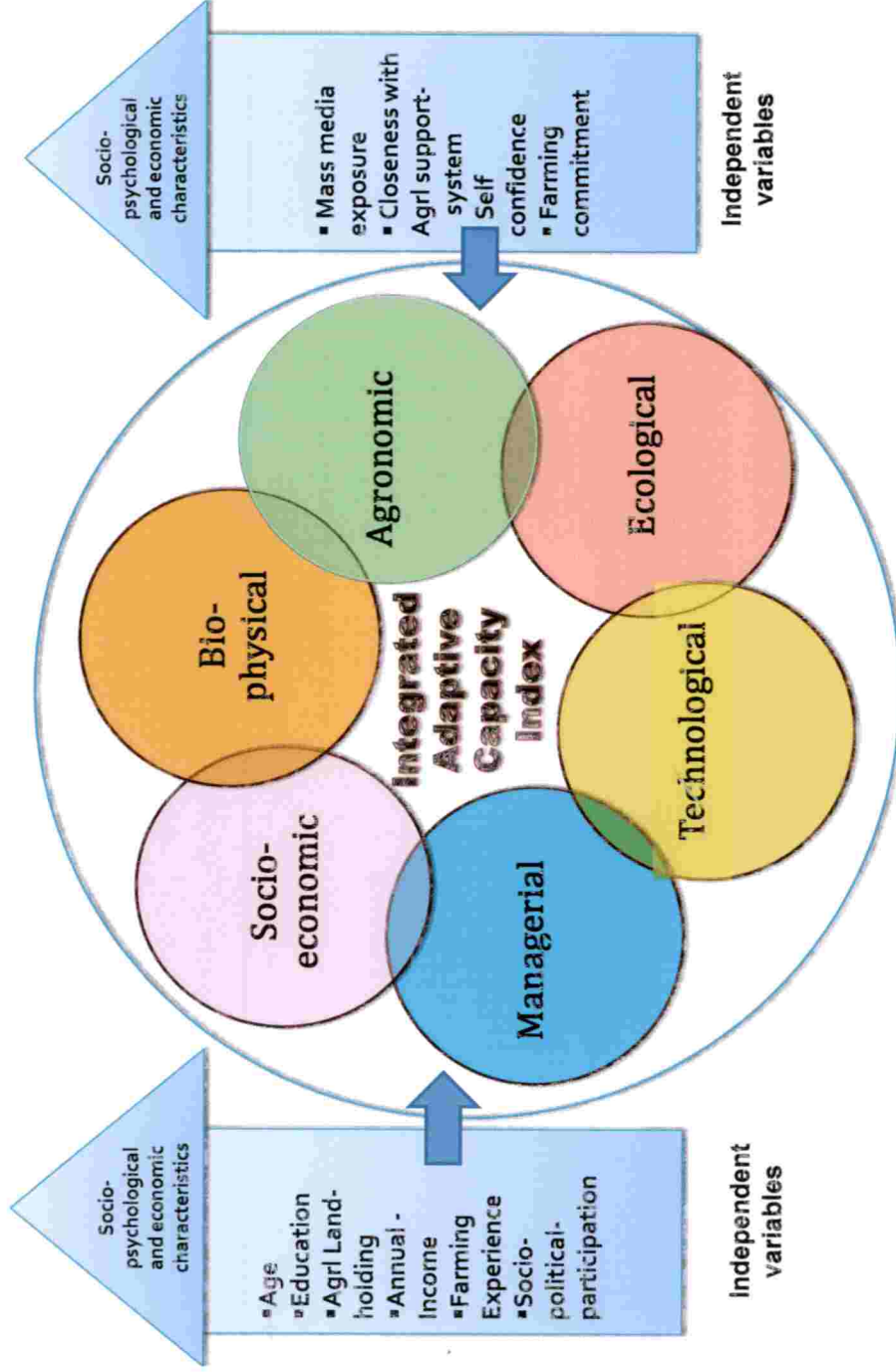
schedule (Appendix-II). The data were collected through personal interview and survey. The data collected from the respondents were scored, tabulated and analyzed using suitable statistical methods.

Keeping in view the objectives of the study and amenability, the data were subjected to different statistical tools. These tests included mean, standard deviation, percentage analysis and cumulative frequencies were for classification of respondents and comparison. A brief description of the tools used is given below.

1. **Mean:** The arithmetic mean scores for all the variables were worked out to make suitable comparisons wherever necessary.
2. **Percentage Analysis:** Percentage analysis was done to make classification of the respondents wherever necessary.
3. **Cumulative Frequency:** Cumulative frequency is used to determine the number of observations that lie above (or below) a particular value in a data set. The classification is done as the value less than mean minus standard deviation gives the low category and the value more than the sum of mean and standard deviation gives the high category. The values that ranging in between will fall under the medium category.
4. **Correlation Analysis:** Correlation coefficient is a measure of the relationship between two variables. The correlation coefficient was worked out to measure the relationship between the dependent variable and the independent variables.
5. **Categorization:** Categorization of each independent variable is done by calculating the frequency percentage of the total score obtained by the respondent in each category.
6. **Principal component analysis:** was done using SPSS

3.8. Conceptual frame work of the study

The conceptual model of the study has been framed based on the objectives of the study. The frame work explains the relationship between the dependent variable, the Integrated Adaptive capacity and its six factors - the bio-physical, agricultural, ecological, socio-economic, technological and managerial - and the independent variables - socio-psychological and economic characteristics of the farmers.



Dependent variable - Integrated Adaptive Capacity Index and its 6 factors

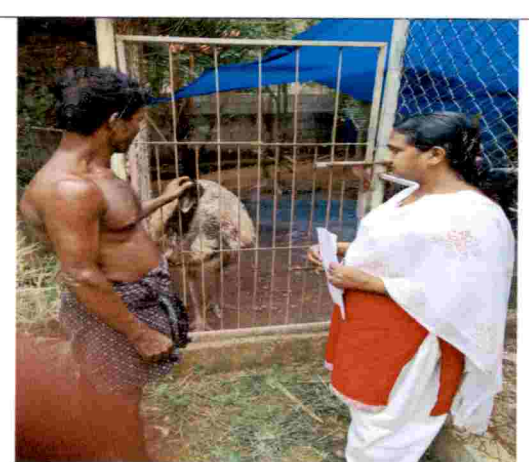
Fig. 23 Conceptual model of the study

RESULTS AND DISCUSSIONS

Data collection- Survey and interview method



Data collection- Survey and interview



4. RESULTS AND DISCUSSION

The most significant part of research report 'Results and Discussions' includes detailed analysis of major results and pertaining information for arriving at valid conclusion and recommendations. Discussion helps to interpret the results of the study in proper perspective and to relate them with other relevant studies.

Based on the set forth objectives, the data collected through survey and interview method, were tabulated and various statistical analyses had been done to formulate the results. The major objectives of the research were: preparation of an inventory of certified organic farmers/farms of Kerala, analysis of integrated adaptive capacity of the organic and conventional farmers, assessment of the personal, socio-economic and psychological characteristics of the farmers and the agro-ecological characteristics of their farms and formulation of a workable climate change adaptation strategy.

The final results obtained are presented under the following broad headings:

- 4.1. Inventory of the certified organic farmers/farms of Kerala
- 4.2. Analysis of the personal, socio-economic and psychological characteristics of the respondents
- 4.3. Relationship between major profile characteristics of the respondents.
- 4.4. Analysis of Integrated Adaptive Capacity Index (IACI)
- 4.5. Comparison of organic and conventional farmers
- 4.6. Analysis of Agro-ecological profile
- 4.7. Case study of selected farmers with higher IAC Index
- 4.8. Constraints as perceived by the farmers
- 4.9. Empirical model of the study
- 4.10. Formulation of a workable climate change adaptation strategy for sustainable crop production in Kerala
- 4.11. Future lines of research

4.1. Inventory of the certified organic farmers of Kerala

The list of certified organic farmers were collected from the INDOCERT and Lacon India, the authorized certifying agencies in Kerala, accredited by APEDA (Agricultural and Processed Products Export Development Authority), Ministry of Commerce, Government of India, on behalf of NAB (National Accreditation Board), under the National Programme for Organic Production (NPOP), Govt. of India. Also the details of groups and farmers certified under PGS (Participatory Guarantee System)- India was included.

Table.21. Inventory of the certified organic farmers of Kerala

Sl. No	Name	Address	Crops grown	AEU
1	Abraham Varkey	Elavukaduppil H, Nettithozhu P.O, Idukki, Kerala Ph: 04868-285209	Pepper, Coffee, Cardamom, Tapioca, Turmeric, Banana, Ginger	16
2	Bhaskaran Nambiar T.V	Brusl House Valakkai, Koyyam P.O, Kannur, Kerala Ph: 04602260353,0498- 2260353	Coconut, Arecanut , Plaintain, Pepper	11
3	Bovas G	Pandimamvilaveedu, Kokuzhikunnu , Wayanad, Kerala Ph: 9747134111	Pepper , Coffee , Arecanut, Nutmeg, Coconut , Pepper, Banana, Ginger , Turmeric, Cardamom, Chilly bird eye, cloves	21

(The detailed inventory of farmers is given in the Appendix I)

4.2. Analysis of the personal, socio-economic and psychological characteristics of the respondents

Analysis of the personal, socio - economic and psychological characteristics of the respondents helps to get a general understanding about the nature of respondents, their educational status, social participation, interaction with agricultural support system etc. which in turn will help the researcher for interpreting the data in the right direction. So the detailed investigation on personal, socio-economic and psychological characteristics of the respondents and comparison of organic and conventional farmers with respect to their profile characteristics are given below.

4.2.1 Age

Age was operationally defined as the number of years completed by the respondent at the time of investigation. The respondents were classified into three categories: young, middle aged and old age. Distribution of respondents according to their age is presented in Table 22.

Table 22: Distribution of respondents based on age

Category	Range	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
		No.	%	No.	%	No.	%
Young	≤ 35	6	8	5	6.67	11	7.34
Middle aged	36-54	40	53.33	31	41.33	71	47.33
Old aged	≥ 55	29	38.67	39	52	68	45.33
Total		75	100	75	100	150	100

From the table 22, it was observed that majority (47.33%) of the respondents belonged to middle aged category followed by old age (45.33%). The young age category was found to be only 7.34 percent.

Analysing the organic and conventional farmers, it was found that, while majority (53.33%) of the organic farmers belonged to middle aged group, majority (52%) of the conventional farmers belonged to old aged group. In both the groups, the number of young farmers were found to be very low (<10 %).

This is indicating that the younger generation is not selecting farming as their livelihood, as it is considered to be a low profile profession, with low income generation, involving higher risk. So it can be presumed that the young generation is selecting other high profile jobs as livelihood source. Adeola (2014), Rubeena (2015), Chinchu (2016) and Reghunath (2016) reported similar results.

Hence it is inferred that a great majority of the farmers (more than 90%) in the study area belonged to middle aged group (34-55 years) and old age group (above 55 years). The young age group was only below 10 percent, as they are not interested to consider farming as a livelihood option.

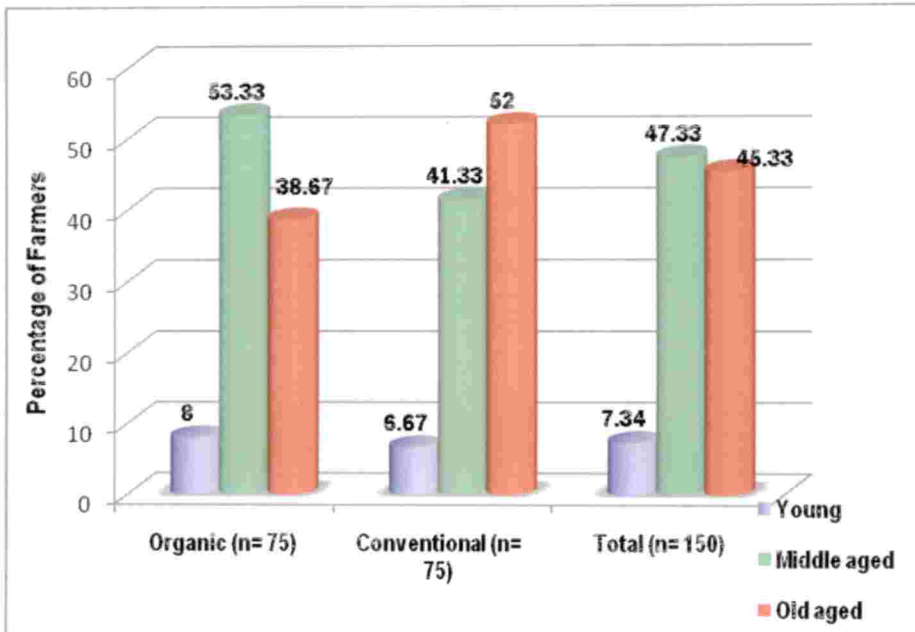


Fig. 25: Distribution of respondents based on age

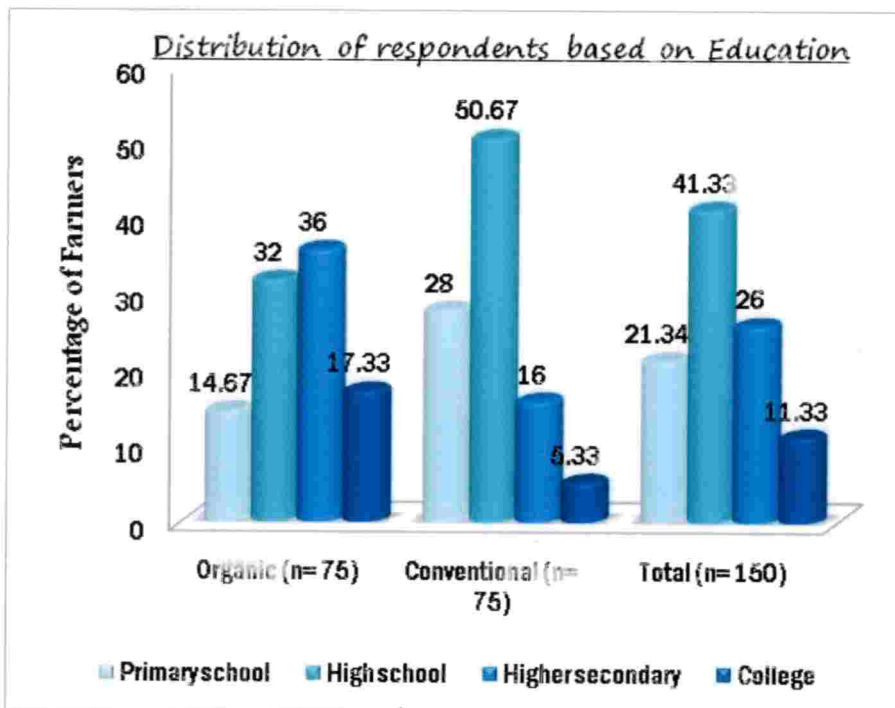


Fig. 26: Distribution of respondents based on education

4.2.2 Education

Education was operationally defined as the extent of formal education achieved by the respondent. Categorization of the farmers according to their education is furnished in table 23.

Table 23: Distribution of respondents based on Education

Category	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
	No.	%	No.	%	No.	%
Primary school	11	14.67	21	28	32	21.34
High school	24	32.0	38	50.67	62	41.33
Higher secondary school	27	36.0	12	16	39	26.0
College	13	17.33	4	5.33	17	11.33
Total	75	100	75	100	150	100

From the Table: 23, it could be seen that majority (41.33%) of the farmers had attained high school level education, followed by higher secondary level (26%), then primary (21.3%) and collegiate level (11.33%). Anupama (2014) and Reghunath (2016), reported similar results where majority of the respondents were educated up to High school level.

Analysing the educational status of the organic and conventional farmers, it can be understood that majority of the organic farmers (36%) had higher secondary level of education followed by high school (32%), collegiate (17.33%) and primary level (14.67%), whereas a great majority of conventional farmers (50.67%) had studied up to high school level followed by primary school level education (28%), higher secondary (16%) and collegiate level education was found to be only 5.33 percent.

Guar (2016) reported that educated and well- informed farmers with the aid of Kissan help lines, assisted by appropriate technology, have made impressive progress in organic farming, owing to the ill effects of chemical pesticides and an increased acceptance of organic food, biological farming is being widely regarded as the next phase of evolution in the history of agriculture.

Hence the results indicated that as the level of education increases, the farmers are more exposed to information sources, gaining of knowledge regarding the ill effects of chemical farming and shifting to organic farming as a safe method of crop production.

4.2.3 Agricultural land holding

Agricultural land holding was referred as the total extent of land area under cultivation by an individual farmer in acres at the time of enquiry. Categorization of respondents based on agricultural land holding is given in table 24.

Table 24: Distribution of farmers based on Agricultural Land holding

Category	Range	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
		No.	%	No.	%	No.	%
Low	<1 acre	19	25.33	40	53.33	59	39.33
Medium	1-5 acres	39	52.0	31	41.33	70	46.67
High	>5 acres	17	22.67	4	5.34	21	14.0
Total		75	100	75	100	150	100

From the table 24, it can be seen that 46.67 percent of farmers possessed 1 - 5 acres of land and 39.33 percent of farmers had an area below 1 acre. 14 percent of farmers possessed more than 5 acres of land.

When comparing organic and conventional farmers with regard to agricultural land holding, it can be seen that majority of the organic farmers (52%) are cultivating an area between 1 to 5 acres whereas more than half of the conventional farmers (53.33%) were having an area of below 1 acre under cultivation. It can also noted that one third of organic farmers (25.33%) were cultivating an area of less than 1 acre area and near one third (22.67%) of the them are cultivating an area of above 5 acres. When we look into the status of conventional farmers, it can be seen that near half of them were cultivating an area between 1 to 5 acres and only a very few farmers belonged to the higher category (5.344 %).

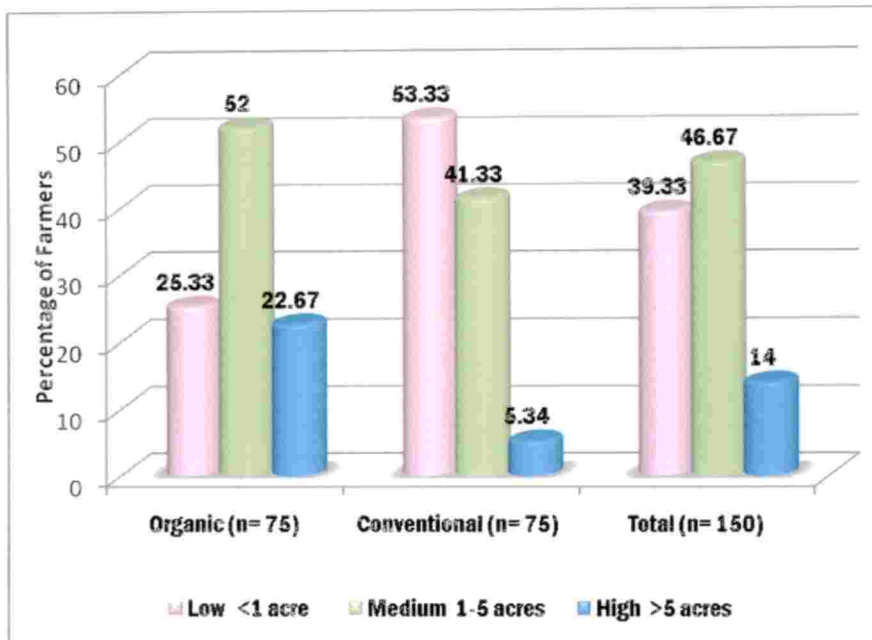


Fig. 27: Distribution of farmers based on Agricultural Land holding

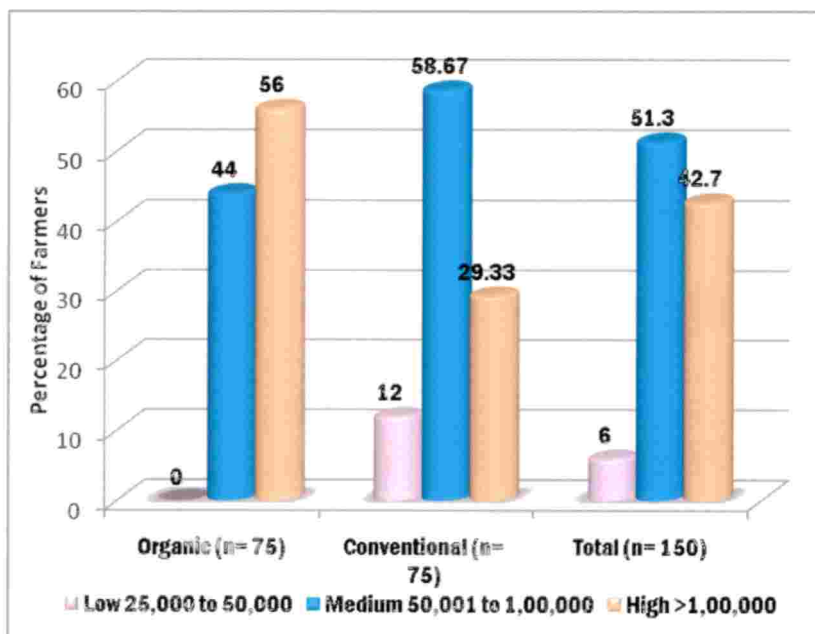


Fig. 28: Distribution of farmers based on Annual Income

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The results indicate that majority of the farmers possessed an area of 1 to 5 acres and a very few farmers had more than 5 acres of land holding. In Kerala, availability of land is one of the limiting factors of farming. As the population is growing high, the land area is getting fragmented and the per capita availability becomes lesser, which in turn reduces the area for cultivation also.

4.2.4 Annual Income

Annual income was operationalised as the total income obtained by an individual farmer in one year in rupees. The farmers were categorized in to three – low, medium and high categories and the details are given in the Table. 25.

Table 25: **Distribution of farmers based on Annual Income**

Category	Range	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
		No.	%	No.	%	No.	%
Low	25,000 to 50,000	0	0	9	12	9	6.0
Medium	50,001 to 1,00,000	33	44.0	44	58.67	77	51.3
High	>1,00,000	42	56.0	22	29.33	64	42.7
Total		75	100	75	100	150	100

From the table it is clear that almost half of the farmers belonged to medium category, earning between Rupees 50,000 to one lakh. 42.7 percent of the farmers were earning more than 1,00,000/- rupees and a very few farmers (6 % only) were getting less than 50,000 rupees per annum, belonging to low category.

Majority of the farmers (56%) from organic group were getting an income above 1,00,000/- rupees, closely followed by 44 percent belonging to medium category, earning between rupees 50,001 to 1,00,000 per year. It can be noted that there was no any farmer coming under the 'low' group, for organic farmers, indicating that a great majority of the organic farmers are earning more than Rs. 50,000/- per year. For the conventional group of farmers, 58.67 percent belonged

to medium category, followed by 29.33 percent for high and 12 percent farmers for low category, earning less than 50,000 rupees as annual income.

Hence it can be inferred that nearly half of the respondents were earning an annual income of Rs. 50,000/- to 1,00,000/-. As the input costs are becoming higher, the cost of cultivation is also increasing. In contradiction, the real farmers are not getting a reasonable income due to the interference of middlemen. Facilitating direct marketing, avoiding middlemen, value addition and strengthening marketing facilities in favour of farmers are needed for improving the income of the farmers.

4.2.5 Farming Experience

Farming Experience was referred as the total number of years the respondent has been engaged in farming. The results obtained are shown in Table: 26.

Table 26: **Distribution of farmers based on Farming Experience**

Category	Range (years)	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
		No.	%	No.	%	No.	%
Low	Up to 5	4	5.3	25	33.33	29	19.3
Medium	6 -10	18	24.0	18	24.0	36	24.0
High	>10	53	70.7	32	42.67	85	56.6
Total		75	100	75	100	150	100

From the table: 26, it could be observed that majority (56.6%) of the farmers was coming under the high group category with more than 10 years of farming experience.

Coming to the organic and conventional groups, a significant proportion (70.7%) of the farmers of organic group had more than 10 years of farming experience, followed by 24 percent and 5.3 percent in medium and low category, respectively. While 42.67 percent of conventional farmers had an experience of more than 10 years belonging to high group category, 33.33 percent belonged to the low group category with less than 5 years experience and 24 percent belonged

to medium category with 6 to 10 years of farming experience. This result is in consonance with the result obtained by Rubeena (2015) where significant proportion of the farmers had more than 10 years of farming experience.

Thus, it can be inferred that majority of the respondents were having an experience of more than ten years in the field of farming. It had been observed that most of them had started farming from their childhood onwards by helping their parents in farming activities.

4.2.6. Socio-political participation

By socio-political participation it is meant that the degree of involvement of respondents in formal and informal social organizations either as a member or as an office bearer, which also includes the extent of participation in organizational activities.

Table 27: Distribution of farmers based on socio-political participation

Category	Range (Score)	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
		No.	%	No.	%	No.	%
Low	1- 2	23	30.7	61	81.33	84	56.0
Medium	3 - 6	37	49.4	9	12	46	30.7
High	7- 8	15	20	5	6.67	20	13.3
Total		75	100	75	100	150	100

From the table 27, it could be seen that majority of the farmers (56 %) had low socio-political participation and 30.7 percent of the farmers were coming under medium category, indicating their participation in social and political activities as a member in such groups. Only about 13.3 percent of farmers were found to be actively engaging with socio-political activities.

It can be observed that almost half of the organic farmers are relating with some kinds of social or political activities, where as 30.7 percent are not having much involvement in such activities and 20 percent of this group are actively related with social and political activities. It can also be noted that as high as 81.33 percent of the conventional farmers were not participating in socio-political activities.

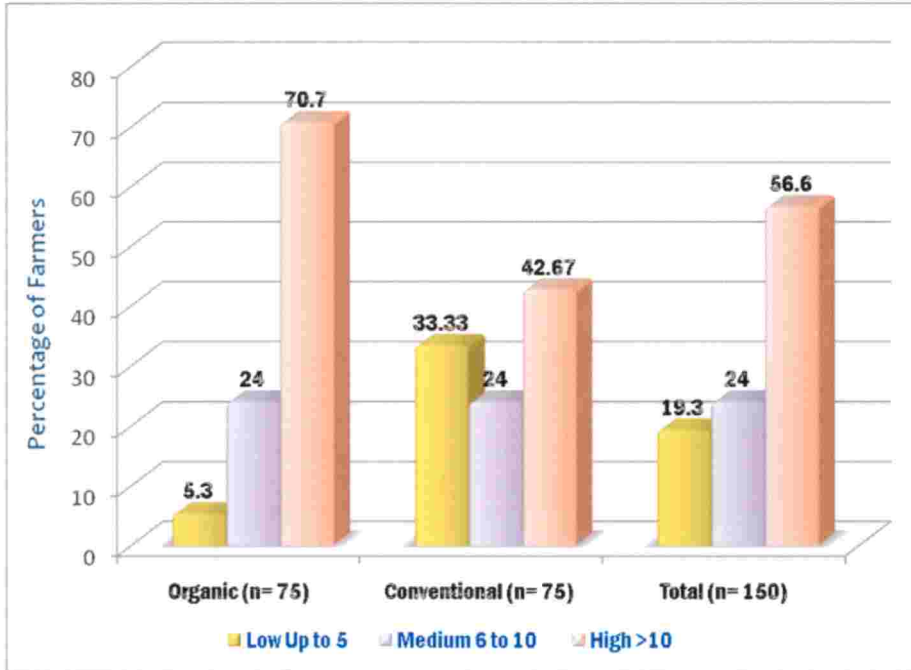


Fig. 29: Distribution of farmers based on Farming Experience

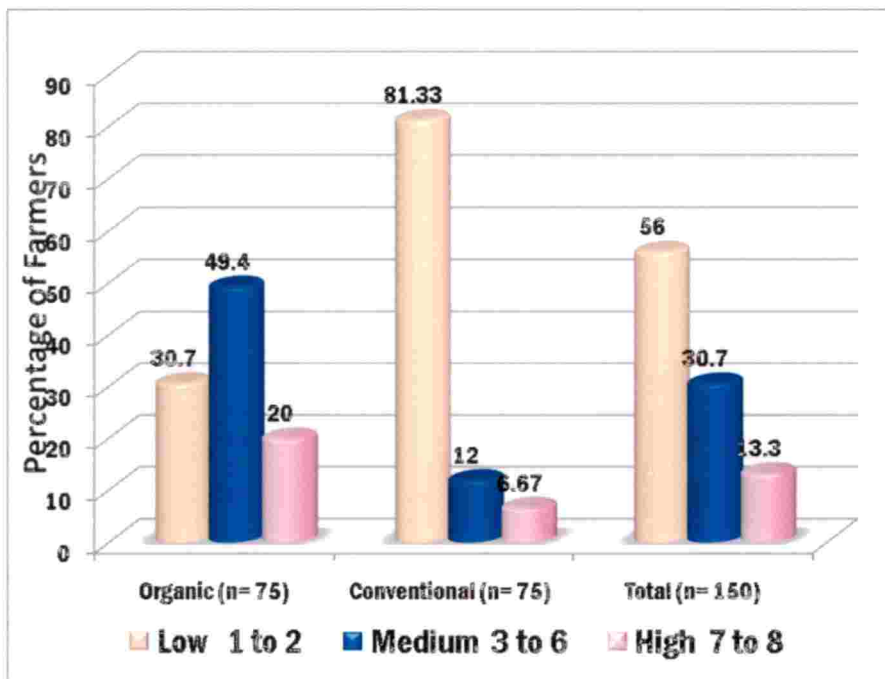


Fig. 30: Distribution of farmers based on Socio-political participation

Hence, it could be inferred that a great majority of the farmers were not interested to involve in socio-political activities, as most of the time they were engaged in farming and related activities.

4.2.7. Mass media exposure

Mass media exposure was defined as the degree to which the respondents were exposed to various mass media. Distribution of respondents based on exposure to various mass media is shown in table: 28.

Table 28: **Distribution of farmers based on Mass media exposure**

Category	Range	Organic (n= 75)		Conventional (n= 75)		Total (n= 150)	
		No.	%	No.	%	No.	%
Low	6 - 13	0	0	22	29.33	22	14.70
Medium	14 - 20	34	45.33	50	66.67	84	56.00
High	21 - 24	41	54.67	3	4	44	29.3
Total		75	100	75	100	150	100

The data in the table 28 revealed that, 56 percent of the total farmers were having medium, 29.3 percent high and 14.7 percent were having low level of mass media exposure.

Majority (54.57%) of the organic farmers were regularly using mass medias like news paper, radio, television, agricultural magazines, internet and social medias for getting information related to farming. Nearly half of the balance organic farmers (45.33%) were having medium level of mass media exposure and the farmers falling under the low category was found to be nil. Among the conventional farmers, more than half (66.67%) were having medium level of mass media exposure and 29.33 percent were having low level of exposure with mass media and only 4 percent of the conventional farmers were regularly using mass medias for information gaining. Similar results were reported by Rubeena (2015), in which 66,67percent of the farmers of Kottayam District were in medium group of mass media exposure.

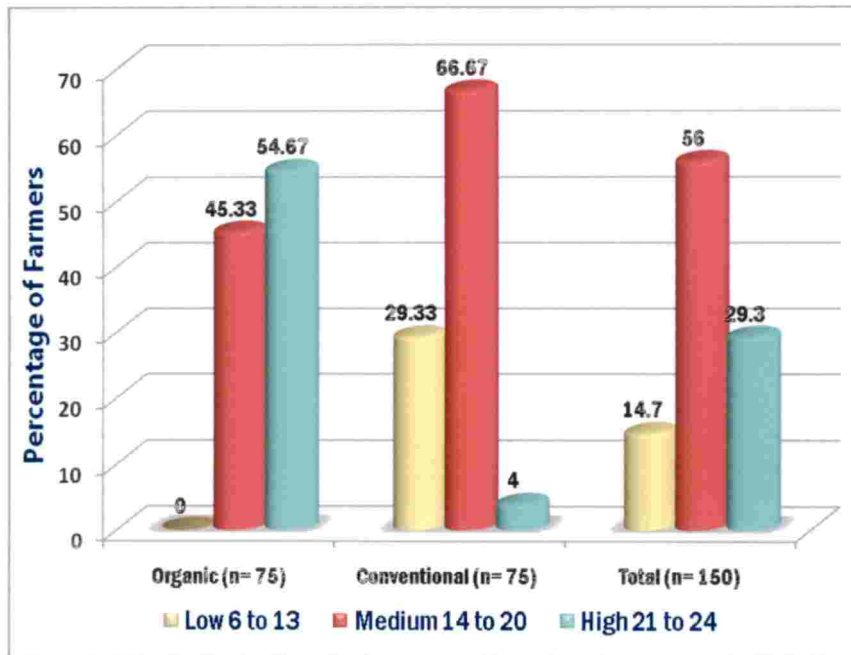


Fig. 31: Distribution of farmers based on Mass media exposure

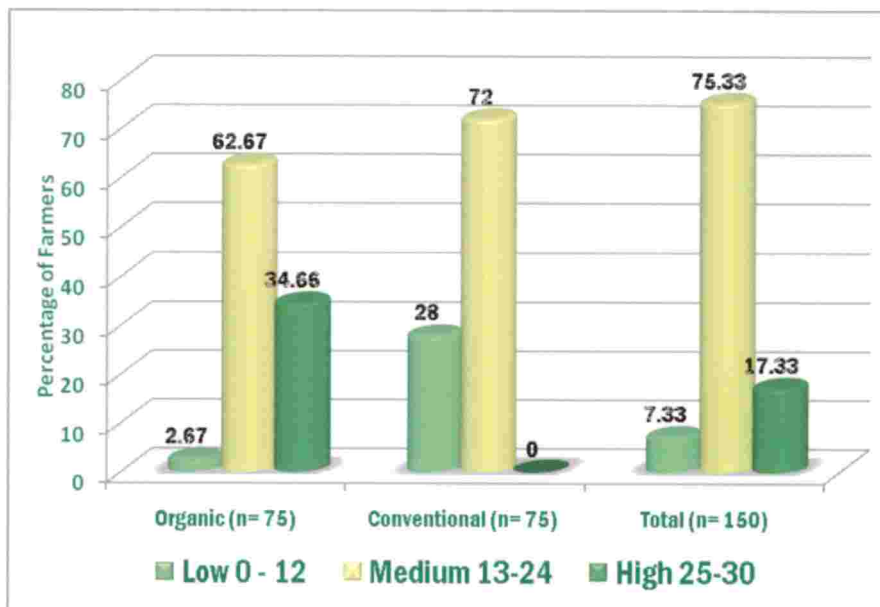


Fig. 32: Distribution of farmers based on Closeness with Agri. Support system

Hence, it is inferred that majority of the farmers were having medium level of mass media exposure. Kerala is the state with highest literacy percentage in India. So majority of the farmers were utilising different types of mass media, such as radio, television, news paper, farm publication and even internet and social media.

4.2.8. Closeness with Agricultural Support System

Closeness with Agricultural support system is defined as the degree to which the respondents meet the extension agents for agricultural information. The results obtained are given in the Table: 29.

Table 29: Distribution of farmers based on Closeness with Agrl. Support system

Category	Range	Organic (n = 75)		Conventional (n = 75)		Total (n = 150)	
		No.	%	No.	%	No.	%
Low	0 - 12	2	2.67	21	28	11	2
Medium	13 - 24	47	62.67	54	72	113	47
High	25 - 30	26	34.67	0	0	26	26
Total		75	100	75	100	150	100

It is clear from the table that 47 percent of the farmers are coming under medium category as they were having some contact with agricultural support system like Agricultural officers, Agricultural assistants, Agricultural University/College/Scientist, Panchayat, Cooperative society, Bank field officer and/ or Agricultural input dealers. 26 percent of the farmers are regularly in touch with many of the agriculture supporting agencies and only 2 percent of the farmers were coming under low category.

While analysing the results of organic and conventional group of farmers, it could be seen that majority of the organic farmers (62.67%) were medium level contacts with agricultural supporting agencies, 34.66 percent has regular contact and only a very low percent (1.3) of organic farmers were coming under low category. In the case of conventional farmers, 75.33 percent were having medium level contact, 17.33 percent were having higher level of association and the remaining 7.33 percent farmers were not having much contact with agricultural

supporting systems. More contact with agricultural support system by the farmers results in higher adoption of climate change adaptation technologies and practices.

Hence it can be concluded that most of the farmers are having a medium level of association with the agricultural offices and other such supporting agencies for meeting their requirements related to farming.

4.2.9. Self-confidence

Self-confidence is operationally defined as the belief of the respondent in his or her abilities. The results obtained are given in Table: 30.

Table 30: Distribution of farmers based on Self confidence

Category	Range	Organic (n = 75)		Conventional (n = 75)		Total (n = 150)	
		No.	%	No.	%	No.	%
Low	0 - 32	1	1.33	17	22.67	16	10.67
Medium	33 - 38	41	54.67	56	74.67	99	66.00
High	39 - 40	33	44	2	2.67	35	23.33
Total		75	100	75	100	150	100

It is apparent from the table 30, that 66 percent of the farmers were having medium level of self confidence, followed by 23.33 percent of the farmers with high and only 10.67 percent of the farmers with low level of self confidence.

It can be noted that majority (54.67%) of the organic farmers had medium level and 44 percent of them were with high confidence level. Only a meagre portion (1.33%) of the organic farmers had low level of self confidence. Among the conventional farmers, 74.67 percent were having medium level of self confidence, 22.67 percent was with low level self confidence and 2.66 percent with high confidence level.

The results are in confirmation with the findings of Eyhorn (2007), in which most of the conventional farmers in the researched region showed little confidence in the future of farming, as decreasing net returns and increasing indebtedness jeopardized the economic viability of their farms.

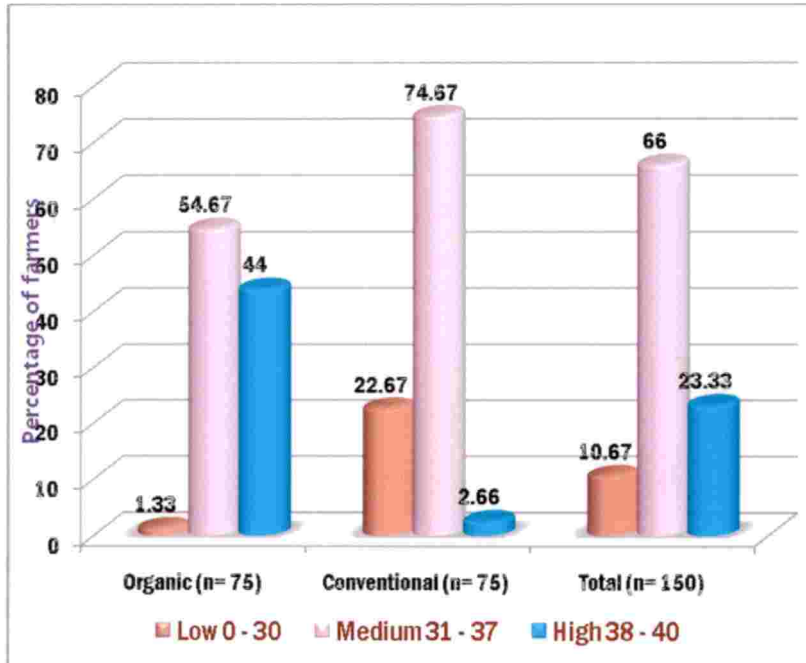


Fig. 33: Distribution of farmers based on Self confidence

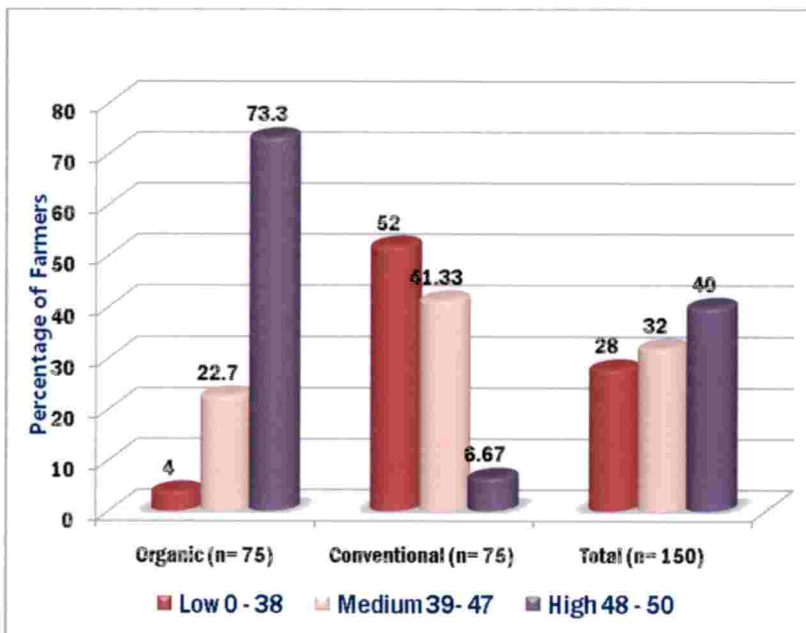


Fig. 34: Distribution of farmers based on Farming Commitment

Hence it can be inferred that majority of the respondents possessed a medium level self confidence. Farming is a profession with high risk, due to the uncertainties of weather, crop failures, price fluctuations etc. and those having confidence in themselves will only choose farming as a livelihood support.

4.2.10. Farming Commitment

Farming commitment is considered as the degree of undertaking additional efforts, sacrificing personal matters to accomplish farming objectives. The obtained results are presented in Table: 31.

Table 31: **Distribution of farmers based on Farming Commitment**

Category	Range	Organic (n = 75)		Conventional (n = 75)		Total (n = 150)	
		No.	%	No.	%	No.	%
Low	0 - 38	3	4.0	39	52	42	28.0
Medium	39- 47	17	22.7	31	41.33	48	32.0
High	48 - 50	55	73.3	5	6.67	60	40.0
Total		75	100	75	100	150	100

It is clear from Table 31 that, 40 percent of the farmers were having high farming commitment, followed by 32 percent with medium and 28 percent with low level of farming commitment.

When we look into the categorisation of organic and conventional farmers, it can be seen that, a great majority of organic farmers (73.3%) were having high farming commitment, 22.7 percent with medium and only 4 percent of the organic farmers were having low level of farming commitment.

In the contrary, majority of the conventional farmers (52%) were having a low level of farming commitment, 41.33 percent of conventional farmers shown medium farming commitment and 6.67 percent was with high level of farming commitment. It could be because, most of the conventional farmers were ready to quit farming in case of getting another job. For them, farming is not said to be a remunerative source of income. Farming with chemicals demands more and more

inputs every year and as a result, in addition to the increase in cost of cultivation, the pests and disease causing organisms become more resistant and the farmers may have to go for different formulations for effective control. This may be the reason that the conventional farmers were shown a lower level of farming commitment, compared to organic farmers.

Thus it can be concluded that majority of the respondents possessed high commitment towards farming. Since the respondents of the organic group is constituted by the certified organic farmers, usually for the first three years, the yield from organic crops will be lesser, but the highly committed farmers are continuing the farming, and gaining a sustainable yield in the coming years. This may be due to the higher farming commitment of organic farmers. Even though the yield is less, they are not willing to quit farming. They might have chosen farming, not as a profession, but as a part of life, blending with nature creating a world of sustainable eco-bio system.

To summarise, the analysis of personal, socio-economic and psychological characteristics indicated that majority of the farmers of the survey area belonged to middle aged category, medium level of annual income (between Rs. 50,000 to 1,00,000/-) and possessed an area of 1 to 5 acres of land. Majority of the farmers were studied up to high school level with high farming experience and farming commitment. Most of the respondents were having medium level of mass media exposure, closeness with agricultural support system and self confidence. Majority of the farmers had a low level of socio-political participation.

The socio economic profile of organic farmers revealed the following: Majority of the organic farmers belonged to middle aged group. A larger section of them had studied up to higher secondary followed by high school, collegiate and primary level. Most of the organic farmers were cultivating an area between 1 to 5 acres, getting an income above 1,00,000/- rupees. A great majority of them possessed high farming experience, mass media exposure and farming commitment. Most of the organic farmers were having medium level of socio-political participation, closeness with agricultural support system and self confidence.

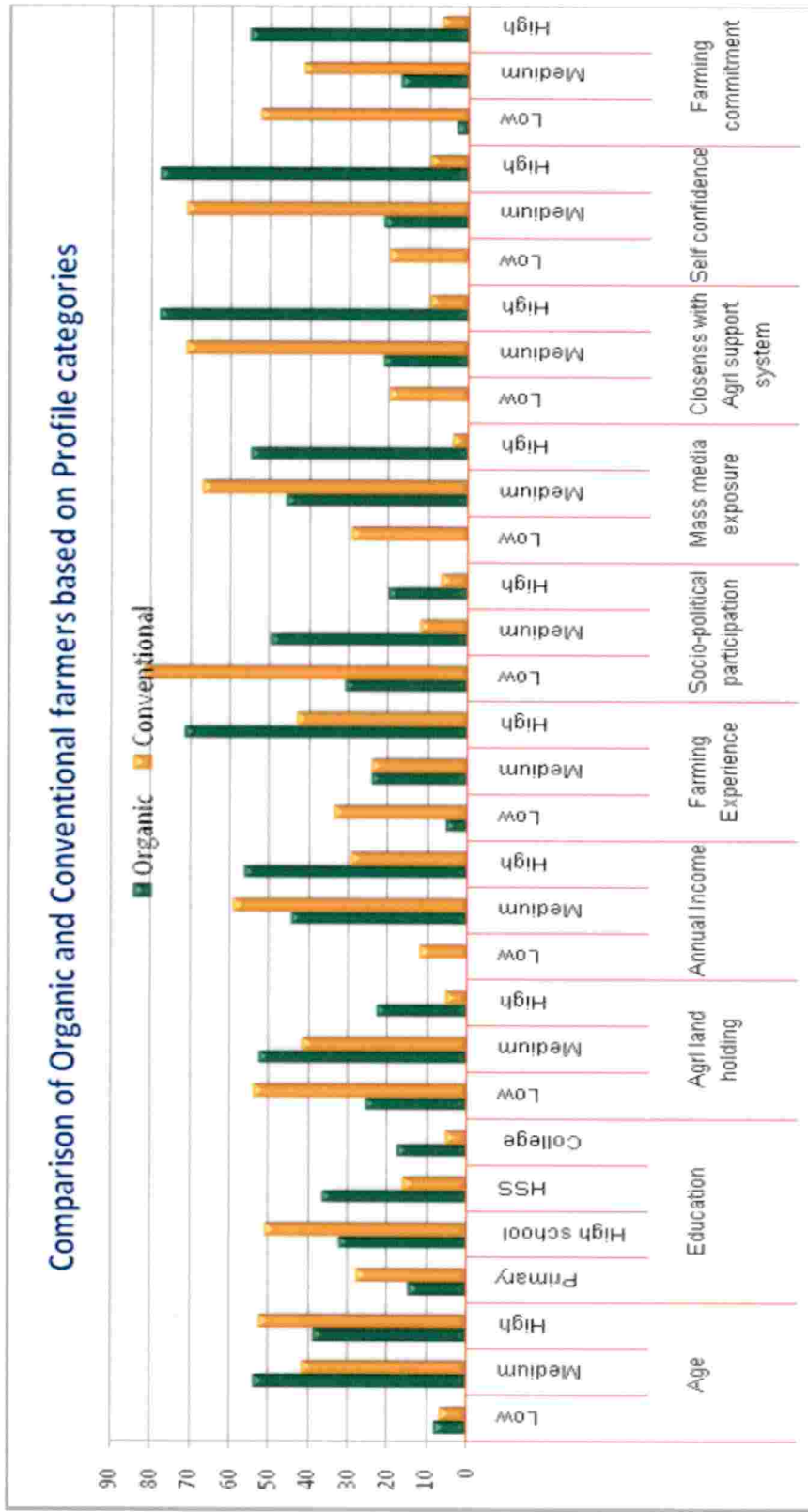


Fig: 35. Comparison of organic and conventional farmers based on profile categories

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The socio economic profile of conventional farmers revealed that, the majority belonged to old aged group. A great majority of conventional farmers were studied up to high school level followed by primary, higher secondary and collegiate level education. More than half of the conventional farmers were having an area of cultivation below 1 acre, earning less than 50,000 rupees. Most of them were having high farming experience. Majority were having medium level of mass media exposure, closeness with agrl. support system and self confidence. Majority of the conventional farmers were falling under low category of socio-political participation and farming commitment.

4.3. Relationship between major profile characteristics of the respondents.

The relationship between major profile characteristics of the respondent farmers were estimated using correlation analysis and the results are given in Table 32.

The variable 'age' was found to be positively and significantly related to the variables 'farming experience' at 1 per cent level. That means as the age increases, farming experience will also increase. At the same time, age was not found to be significant with other profile characteristics.

The variable education was positively and significantly correlated with the profile characteristics like agricultural land holding, annual income, socio-political participation, mass media exposure, closeness with agricultural support system and self confidence at one per cent level and farming commitment at five percent level. Age and farming experience were not found to be significantly related with education. Agricultural land holding was positively and significantly related with education, annual income, socio-political participation, mass media exposure, closeness with agricultural support system, self confidence and farming commitment at one per cent level.

The variables: annual income, socio-political participation, mass media exposure, closeness with agricultural support system, self confidence and farming commitment were positively and significantly related with all the variables except age, indicating that age is not a limiting factor for these characteristics or activities. The variable 'farming experience' was positively and significantly related with all the variables except education, indicating that education is not an influencing factor for farming commitment.

Table: 32. Correlation analysis of major profile characteristics of the respondents

	Age																			
Age	1																			
Education	-0.486	1																		
Agri Land holding	0.038	0.352**	1																	
Annual Income	0.038	0.328**	0.507**	1																
Farming Experience	0.582**	-0.227	0.341**	0.342**	1															
Socio-political participation	-0.080	0.347**	0.327**	0.250**	0.241**	1														
Mass media exposure	-0.109	0.321**	0.414**	0.449**	0.438**	0.437**	1													
Closeness with Agri support system	-0.120	0.326**	0.391**	0.315**	0.294**	0.652**	0.655**	1												
Self confidence	-0.065	0.339**	0.326**	0.378**	0.259**	0.490**	0.591**	0.611**	1											
Farming commitment	0.090	0.153*	0.358**	0.455**	0.466**	0.487**	0.672**	0.644**	0.618**	1										

*Correlation is significant at the 0.05 level (1-tailed)

**Correlation is significant at the 0.01 level (1-tailed)

4.4. Analysis of Integrated Adaptive Capacity (IAC) Index

Integrative Adaptive Capacity Index, in this study was operationally defined as the potential of a farmer to cope with the adverse effects of climate change by adjustments in the bio-physical, agricultural, ecological, socio-economic, technological and managerial systems leading to sustainable livelihood.

4.4. 1. Categorisation of farmers based on IAC Index

The farmers were categorised into three groups viz. Less Adaptable, Moderately Adaptable and Highly Adaptable, according to the Integrated Adaptive Capacity Index and the distribution is furnished in Table: 33

Table 33: Distribution of farmers based on Integrated Adaptive Capacity Index

Category	Range	Organic (n = 75)		Conventional (n = 75)		Total (n = 150)	
		No.	%	No.	%	No.	%
Less Adaptable	0 - 45	0	0	27	36	27	18.0
Moderately Adaptable	46 - 80	39	52	48	64	87	58.0
Highly Adaptable	81- 100	36	48	0	0	36	24.0
Total	Q1=45 Q3=80	75	100	75	100	75	100

From the table 33, it could be seen that majority of the farmers (58%) were found to be moderately adaptable, 24 percent of the farmers were highly adaptable and 18 percent were less adaptable.

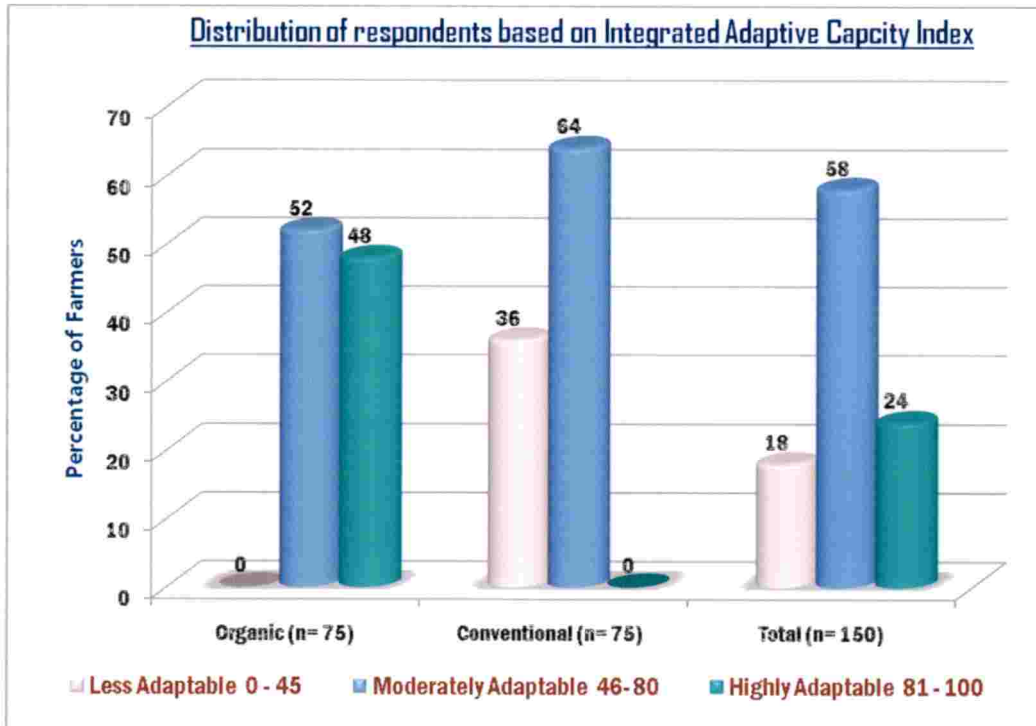


Fig: 36. Distribution of respondents based on Integrated Adaptive Capacity Index

While analysing the adaptive capacity organic farmers, majority (52%) were ‘moderately adaptable’ and nearly half (48%) were ‘highly adaptable’. For the conventional farmers, majority of (64%) were ‘moderately adaptable’ and 36 percent were less adaptable. The ‘less adaptable’ category of the organic group and ‘highly adaptable’ category of conventional group was found to be ‘nil’. So it can be noted that organic farmers range from ‘moderately adaptable’ to ‘highly adaptable’ category whereas conventional farmers range from ‘less adaptable’ to ‘moderately adaptable’ category.

Smith *et al.* (2001) reported that communities with less economic resources, poorer infrastructure, less developed communications and transportation and weak social support systems have less access to adaptation options and are more vulnerable. At the same time, Tiwari *et al.* (2014), stated that diversification of the rural farming, will help in generating more income and more food in addition to reducing the vulnerability of the climate change.

Hence it can be inferred that organic agriculture provides management practices that can help farmers to adapt with climate change through strengthening agro-ecosystems, diversifying crop and livestock production and building farmers’ ability to withstand the ill effects of climate change as well as helping the farmers to adapt with climatic variability in a sustainable way.

4.4.2. Analysis of the factors contributing to IAC Index

In this study, bio-physical, agricultural and ecological factors of the farm and the socio-economic, technological and managerial factors of the farmer were identified as the factors contributing to climate change adaptation.

4.4.2.1. Bio-physical Factor

The percentage distribution of the indicators contributing to the bio-physical factor of organic and conventional farmers is presented in the Table: 34.

Table: 34. Comparison of Organic and Conventional farmers based on indicators of Bio-physical factor

Sl. no	Indicators of Bio-physical factor	Organic (N=75)		Conventional (N=75)	
		Mean Score	Percent age	Mean Score	Percent age
1	Crop suitability	2.76	92.00	2.26	75.33
2	Fallowing due to climatic stresses	2.73	91.00	2.04	68.00
3	Water holding capacity	2.64	88.00	1.26	42.00
4	Crop production potential	2.47	82.33	1.17	39.00
5	Ownership of farm implements/ machines	2.43	81.00	1.26	42.00
6	Sustainable soil fertility	2.41	80.33	1.17	39.00
7	Availability of inputs	2.4	80.00	1.15	38.33
8	Vulnerability of the location	2.26	75.33	1.08	36.00
9	Pest and disease incidents	1.68	56.00	1.06	35.33
10	Sustainable water resources	1.57	52.33	1.02	34.00

The selected indicators of bio-physical factors included: vulnerability of the location, sustainable water resources, water holding capacity, crop suitability, sustainable soil fertility, crop production potential, availability of inputs, pest and disease incidents, ownership of farm implements/ machines and fallowing due to climatic stresses. From the results depicted in Table: 4.17, it is seen that, the farmers are facing problems with regard to indicators like: sustainable water resources (organic farmers - 52.33%, conventional - 34%), pest and disease incidents (organic - 56%, conventional - 35.33%), vulnerability of the location (organic - 75.33%, conventional - 36%) and availability of inputs (organic - 80%, conventional - 38.33%)

Availability of water throughout the crop production is one of the critical inputs for crop production. Sustainable water resources are required for ensuring

continuous supply of water needed for crop growth, especially during the critical growth stages. Shortage of rain fall and severe drought is greatly influencing the sustainability of water resources. Incidence of pest and disease is another major problem facing by both the organic and conventional farmers. Vulnerability of the location is extremely important in determining exposure to the physical impacts of climate hazards. The low-lying areas will be more liable to flooding as a result of extreme rainfall events than higher elevation regions and coastal areas will be subject to a range of hazards than inland regions. Availability of inputs is another limiting indicator of bio-physical factor. Timely supply of inputs is needed for application at right stage and most of the farmers are facing difficulty for the same.

4.4.2.2. Agricultural Factor

It is predicted by various agencies that the climate change will affect agriculture through higher temperatures, greater crop water demand, more variable rainfall and extreme climate events such as heat waves, floods and droughts. FAO is promoting the concept of 'Climate Smart Agriculture' that sustainably increases productivity, resilience, reduces or removes Greenhouse Gases (GHGs) and enhances achievement of national food security and development goals.

Here in this study, in order to estimate the integrated adaptive capacity, under the agricultural factor, the climate friendly agricultural practices which are helping to adapt with climatic variability / change had been delineated and it is further divided in to climate friendly crop production, protection and management practices. The frequency and percentage of organic and conventional farmers who were adopting these practices were found out and the obtained results are detailed below.

4.4.2.2.1. Adoption of climate friendly agricultural practices by organic farmers

The details of adoption of climate friendly crop production, protection and management practices by **organic farmers** are given below.

4. 4.2.2.1a. Adoption of climate friendly crop production practices by Organic farmers:

The frequency and percentage distribution of organic farmers adopting climate friendly crop production practices are given in Table: 35a.

Table: 35a. Adoption of climate friendly crop production practices by Organic farmers

Sl. No.	Climate friendly crop production practices	Frequency	Percentage
1	Crop rotation	75	100
2	Application of organic manures/ bio-fertilizers	75	100
3	Intercropping/ Mixed farming	75	100
4	Mulching	75	100
5	Legume integration	73	97.33
6	Integrated soil and water conservation measures	72	96.00
7	Timely irrigation/ drainage measures	70	93.33
8	Soil acidity /pH management- application of soil amendments	68	90.67
9	Raising and Incorporation of green manure crops	65	86.67
10	Summer ploughing	42	56.00

The results from table 4.18a, revealed that the agricultural practices like 'crop rotation', 'application of organic manures/ bio-fertilizers', 'intercropping/ mixed farming' and 'mulching' were adopted by all the organic farmers. The other practices included: 'legume integration' (97.33%), 'integrated soil and water conservation measures' (96%), 'timely irrigation/ drainage facilities' (93.33%), 'soil acidity /pH management by the application of soil amendments' (90.67%), 'raising and incorporation of green manure leaves/ crops' (86.67%) and 'summer ploughing' (56%).

4. 4.2.2.1b. Adoption of climate friendly crop protection practices by Organic farmers

The frequency and percentage distribution of organic farmers adopting climate friendly crop protection practices are given in Table: 35b.

Table: 35b. Adoption of climate friendly crop protection practices by Organic farmers

Sl. No.	Climate friendly crop protection practices	Frequency	Percentage
1	Use of bio-control agents like: pseudomonas, trichoderma etc.	74	98.66
2	Use of traps/ repellents	73	97.33
3	Use of farmer made preparations from natural ingredients	72	96.00
4	Hand/mechanical weeding	70	93.33
5	Conservation of natural enemies	48	64.00
6	Field sanitation	45	60.00
7	Soil sterilization / solarisation	36	48.00
8	Live fencing/ protection wall	23	30.67
9	Protected cultivation/ rain shelter	17	22.67
10	Cover cropping	6	8.00

From the results of the crop protection practices, (Table 35b), it could be seen that a vast majority (98.66%) of the organic farmers were adopted the 'use of bio-control agents like: pseudomonas, trichoderma etc.' Also the practices like: 'use of traps/ repellents' (97.33%), 'use of farmer made preparations from natural ingredients' (96%), and 'hand/mechanical weeding' (93.33%) were adopted by more than ninety percent of the organic farmers. The other climate friendly plant protection practices included: 'conservation of natural enemies' (64%), 'field sanitation' (60%), 'soil sterilization / solarisation' (48%), 'live fencing/ protection wall' (30.7%), 'protected cultivation/ rain shelter' (22.67%) and 'cover cropping' (8%).

4.4.2.2.1c. Adoption of climate friendly crop management practices by Organic farmers

The frequency and percentage distribution of organic farmers adopting climate friendly crop protection practices are given in Table: 35c

Table: 35c. Adoption of climate friendly crop management practices by Organic farmers

Sl. No.	Climate friendly crop management practices	Frequency	Adoption percentage
1	Changing cropping pattern according to climate change/ variability	73	97.33
2	Selection of healthy planting material	72	96.00
3	Selection of crops according to market demand / price	71	94.66
4	Diversified land use	70	93.33
5	Integration of live stock component	65	86.67
6	Use of alternate means of marketing	63	84.00
7	Use of climate resilient crops/ varieties	56	74.67
8	Nutrient management based on soil testing	32	42.67
9	Management of harvest & post harvest handling	25	33.33
10	Processing and value addition	18	24.00

From Table 35c, the adoption details of organic farmers with regard to climate smart crop management practices, the practices like 'changing cropping pattern according to climate change/ variability'(97.33%), 'diversified land use' (94.66%), 'selection of healthy planting material' (93.33%), were adopted by more than ninety percent of the organic farmers. The other climate smart crop management practices adopted by organic farmers included: 'integration of live stock component' (86.67%) 'Use of alternate means of marketing (84%), 'Use of climate resilient crops/ varieties' (74.67%), 'Nutrient management based on soil

testing' (42.67%), Management of harvest & post harvest handling (33.33%) and 'Processing and value addition' (24%).

4. 4.2.2.2. Adoption of climate friendly agricultural practices by Conventional farmers

The details of adoption of climate friendly crop production, protection and management practices by **conventional farmers** are explained below.

4. 4.2.2.2a. Adoption of climate friendly crop production practices by Conventional farmers

The frequency and percentage distribution of organic farmers adopting climate smart crop production practices are given in Table: 36a.

Table: 36 a. Adoption of climate friendly crop production practices by conventional farmers

Sl. No.	Climate friendly crop production practices	Frequency	Percentage
1	Crop rotation	75	100
2	Intercropping/ Mixed farming	68	90.67
3	Mulching	65	86.67
4	Timely irrigation/ drainage measures	58	77.33
5	Soil acidity (pH) management- application of soil amendments	36	48.00
6	Application of organic manures/ bio-fertilizers	32	42.67
7	Integrated soil and water conservation measures	31	41.33
8	Legume integration	28	37.33
9	Raising and incorporation of green manure leaves/ crops	7	9.33
10	Summer ploughing	4	5.33

The results from table 36a, revealed that the agricultural practice crop rotation, was the only practice adopted by all the conventional farmers. The other practices included: ‘intercropping/ mixed farming’ (90.67%), ‘mulching’ (86.67%), ‘timely irrigation/ drainage measures’ (77.33%), ‘soil acidity /pH management by the application of soil amendments’ (48%), ‘application of organic manures/ bio-fertilizers’ (42.67%), integrated soil and water conservation measures (41.33%), ‘legume integration’ (37.33%), ‘raising and incorporation of green manure leaves/ crops’ (9.33%), and ‘summer ploughing’ (5.33%).

4.4.2.2b. Adoption of climate friendly crop protection practices by Conventional farmers

The frequency and percentage distribution of organic farmers adopting climate friendly crop protection practices are given in Table: 36b

Table: 36 b. Adoption of climate friendly crop protection practices by conventional farmers

Sl. No.	Climate friendly crop protection practices	Frequency	Percentage
1	Use of bio-control agents like: pseudomonas, trichoderma etc.	45	60.00
2	Hand/mechanical weeding	40	53.33
3	Use of traps/ repellents	26	34.67
4	Protected cultivation- Rain shelter	20	26.67
5	Field sanitation	14	18.67
6	Live fencing/ protection wall	11	14.67
7	Use of farmer made preparations from natural ingredients	10	13.33
8	Cover cropping	8	10.67
9	Conservation of natural enemies	3	4.00
10	Soil sterilization / solarisation	2	2.67

From the results of the crop protection practices, (Table 36b), it could be seen that more than half of the conventional farmers (60%) were adopting the ‘use

of bio-control agents like: pseudomonas, trichoderma etc.', The distribution of percentage of conventional farmers adopting the other climate smart plant protection practices were: 'hand/mechanical weeding' (53.33%), 'use of traps/ repellents' (34.67%), 'protected cultivation/ rain shelter' (26.67%) 'field sanitation' (18.67%), 'live fencing/ protection wall' (14.67%), 'use of farmer made preparations from natural ingredients' (13.33%) 'cover cropping' (10.67%), conservation of natural enemies (4%) and soil sterilization / solarisation (2.67%).

As the conventional farmers were using chemical pesticides, for the control of pests, the population of natural enemies were adversely affected. But it is promising to note that majority (60%) of the conventional farmers were using the bio-control agents like pseudomonas, trichoderma etc., for the control of pests and diseases as well as for improving the general health and vigour of crops. It is also noticed that the conventional farmers were using chemicals for the control of pests and diseases, in a restricted manner, as they were aware about the harmful effects of chemical formulations.

4. 4.2.2.2c. Adoption of climate friendly crop management practices by Conventional farmers

The frequency and percentage distribution of organic farmers adopting climate friendly crop management practices are given in Table: 36c

From the table 36c, it can be seen that 'changing cropping pattern according to climate change/ variability, were adopted by 92 percent of conventional farmers. Eighty eight per cent of the conventional farmers were following the practice 'selection of healthy planting materials' The other climate friendly crop management practices included: 'diversified land use' (86.67%), 'selection of crops according to market demand / price' (80%), 'use of alternate means of marketing' (73.33), 'soil testing based nutrient management' (44%), 'use of climate resilient crops/ varieties' (33.33%), 'management of harvest & post harvest handling' (26.67%) and 'processing and value addition' (24%).

Table: 36c. Adoption of climate friendly crop management practices by conventional farmers

Sl. No.	Climate friendly crop management practices	Frequency	Percentage
1	Changing cropping pattern according to climate change/ variability	69	92.00
2	Selection of healthy planting material	66	88.00
3	Diversified land use	65	86.67
4	Selection of crops according to market demand / price	60	80.00
5	Use of alternate means of marketing	55	73.33
6	Integration of live stock component	48	64.00
7	Soil testing based nutrient management	33	44.00
8	Use of climate resilient crops/ varieties	25	33.33
9	Management of harvest & post harvest handling	20	26.67
10	Processing and value addition	18	24.00

Climate friendly agricultural practices are the farming activities helping to adapt with climate change and /or build resilience to shocks and variability leading to sustainable crop production. According to FAO (2011), replacement of synthetic fertilizers with biomass management by organic farmers results not only in enhanced soil fertility, but also increased soil carbon sequestration. The Intergovernmental Panel on Climate Change (IPCC) considers many techniques packed into organic management as relevant mitigation and adaption actions, such as the integration of leguminous plants into the crop rotations, excellent soil cover, mixed farming systems and the longevity of ruminants.

Transition from annual cropping to a mixed agro-forestry system, increases the number of trees that reduce gases contributing to global warming. At the same time, the trees add leaf litter to the soil as mulch, soil evaporation is slowed and the soil holds more water and nearby crops withstands dry spells longer. These all increase the adaptive capacity of the farming system (FAO, 2010b).

Several studies proved that organic farming increases the organic content of the soil through conservation tillage, enhances the water holding capacity and reduces erosion thereby helping to get more resilient yields. Promoting soil carbon capture also helps mitigate climate change. The integrated soil fertility management that can lower fertilizer costs, increase soil carbon and improve yields. Climate-smart agriculture focus on landscape approaches leading to integrated planning of land, farming, forests, fisheries and water to ensure sustainable livelihood.

4. 4.2.3. Ecological Factor

The percentage distribution of the indicators of ecological factor of the organic and conventional farmers is presented in the Table: 37.

Table: 37. Comparison of Organic and Conventional farmers based on the indicators of Ecological factor

Sl. no	Indicators of Ecological factor	Organic (n = 75)		Conventional (n = 75)	
		Mean Score	Percentage	Mean Score	Percentage
1	Conservation of biodiversity	2.89	96.33	2.45	81.67
2	Conservation of natural vegetation	2.87	95.67	2.12	70.67
3	Avoiding the use of chemicals	3	100	2.31	77.00
4	Farming with minimum pollution	2.66	88.67	2.24	74.67
5	Presence of beneficial organisms	2.56	85.33	2.04	68.00
6	Local resource utilization	2.55	85.00	1.34	44.67
7	Recycling and reuse of resources	2.48	82.67	1.26	42.00
8	Sustainable waste management	2.47	82.33	1.24	41.33
9	Integration of agro-forestry	2.46	82.00	1.23	41.00
10	Effective utilization of solar energy	2.43	81.00	1.14	38.00
	Total	26.17		17.44	

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159

The practices like conservation of biodiversity, conservation of natural vegetation, avoiding the use of chemicals, and farming with minimum pollution, were adopted by more than 70 percent of the farmers from both the groups. It can be noticed that 'avoiding the use of chemicals' was adopted by all the organic farmers, as organic farmers are not using any chemicals in any stages of the cultivation. The recycling and reuse of resources, sustainable waste management, integration of agro-forestry and effective utilization of solar energy were the practices which needs more attention considering the low rate of adoption (<85 % for organic and < 45 % for conventional farmers).

Chattopadhyay and Chattopadhyay (1996) said that what is increasingly a matter of concern in Kerala is that environmental degradation has set in leading to gradual shrinking of opportunities and imposing constraints on resource use which has a serious negative impact on the development process. Improving ecosystem management and biodiversity can provide a number of ecosystem services, which can lead to more resilient, productive, sustainable systems that may also contribute to reducing or removing green house gases. Services include control of pest and disease, regulation of microclimate, decomposition of wastes, regulating nutrient cycles and pollination (FAO, 2010b).

The eco-friendly practices are being adopted by all farmers, but, the percentage of adoption by organic farmers is more, compared to the conventional farmers. Organic farming is not just raising of crops, but it judiciously combines different biological and eco-friendly components such as: livestock, poultry, apiculture, insitu manure production etc and efficient recycling of food, water and energy is created. For example, food and other wastes from house and field can be fed to the live stock/ poultry and the manure from them can be utilized for crop production. It not only reduces the input cost but ensures safe waste disposal also, with added advantage of healthy food production.

4. 4.2.4. Socio-economic Factor

The indicators to the socio-economic factor were: access to basic services, opportunity for lifelong learning and knowledge sharing, institutional/organisational support, diversified sources of income, income generation potential, crop insurance, use of family labour, affiliation to social groups, credit access and asset ownership.

The percentage distribution of the sub factors of the socio economic factor of the organic and conventional farmers is presented in Table: 38.

Table: 38. Comparison of Organic and Conventional farmers based on the indicators of Socio-economic factor

Sl. no	Indicators of Socio-economic factor	Organic (n = 75)		Conventional (n = 75)	
		Mean Score	Percentage	Mean Score	Percentage
1	Access to basic services	2.67	89.00	2.16	72.00
2	Opportunity for lifelong learning	2.56	85.33	1.4	46.67
3	Knowledge sharing with fellow farmers	2.45	81.67	1.46	48.67
4	Marketing of farm produces	2.43	81.00	1.82	60.67
5	Sustainable income generation	2.21	73.67	1.34	44.67
6	Credit access	2.19	73.00	1.23	41.00
7	Diversified sources of income	2.18	72.67	1.23	41.00
8	Crop insurance	2.16	72.00	1.12	37.33
9	Financial improvement through farming	2.11	70.33	1.01	33.67
10	Use of family labour	2.01	67.00	1.23	41.00

From Table 38, it can be noticed that, access to basic services, opportunity for lifelong learning, knowledge sharing with fellow farmers, marketing of farm produces were the indicators which are mostly adopted by the farmers (>80% for

organic and > 45% for conventional farmers). Diversified sources of income, crop insurance, financial improvement through farming and use of family labour were the indicators which needed to be improved as the percentage of adoption was below 50%. It can also be inferred that there existed a significant difference between organic and conventional farmers with regard to the indicators of socio-economic factor.

The results are in confirmation with the findings of Eyhorn (2007) and Wani *et al.* (2013). According to Wani *et al.* (2013) organic farming comprises highly diverse farming systems and thus increases the diversity of income sources and the flexibility to cope with adverse effects of climate change and variability, such as changed rainfall patterns, leading to higher economic and ecological stability through optimized ecological balance and risk- spreading. Eyhorn (2007) confirmed that the lower production costs and stabilized incomes helped the organic farmers to reduce their vulnerability to drought and market price fluctuations, improved economic performances, enabling them to get out of the debt-cycle and to re-invest in agricultural intensification and in diversifying their livelihood base.

A more stable farm income helps to enhance the adaptive capacity of the farmers. Also the social factors like opportunity for lifelong learning and knowledge sharing and access to basic services, helps the farmers to derive pertinent information that strengthen their ability to adapt to climate change, either directly from training, sources of climate information, or indirectly through interactions and knowledge-sharing with other farmers.

4. 4.2.5. Technological Factor

The percentage distribution of the indicators of technological factor of the organic and conventional farmers is presented in the Table: 39.

Table: 39. Comparison of Organic and Conventional farmers based on the indicators of Technological Factor

Sl. no	Indicators of Technological Factor	Organic (n = 75)		Conventional (n = 75)	
		Mean Score	Percentage	Mean Score	Percentage
1	Awareness about climate change	2.87	95.67	1.42	47.33
2	Use of water harvesting/ recharging structures	2.58	86.00	2.14	71.33
3	Adoption of innovative technologies	2.56	85.33	1.37	45.67
4	Utilization of trainings, seminars, ICT/internet sources, etc.	2.55	85.00	1.03	34.33
5	Use of micro irrigation	2.36	78.67	0.68	22.67
6	Indigenous technical knowledge related to climate change adaptation	2.13	71.00	0.84	28.00
7	Farm mechanization	2.11	70.33	0.67	22.33
8	Utilisation of weather information	2.1	48.44	0.86	28.67
9	Keeping a record of agricultural information	1.93	41.00	1.02	34.00
10	Preservation of genetic resources	1.26	38.33	0.54	18.00
	Total	22.45		10.57	

Awareness about climate change, use of water harvesting/ recharging structures, adoption of innovative technologies, utilization of trainings, seminars, ICT/internet sources, etc. were the indicators with higher mean score. The indicators needed more attention included; farm mechanization utilisation of weather information, keeping a record of agricultural information and preservation of genetic resources. Preservation of genetic resources was the indicator which was got lowest mean score and adoption percentage (38.33% for organic and 8% for conventional farmers).

The adaptive capacity can be further strengthened by adding timely weather forecasting and its utilization and risk insurance to cover losses due to climatic shocks or extreme climatic incidents. The weather information is an important input in making farming decisions and most of the farmers monitor the weather/climate regularly.

4. 4.2.6. Managerial Factor

The percentage distribution of the sub indicators of managerial indicator of the organic and conventional farmers is presented in the Table: 40.

Table: 40. Comparison of Organic and Conventional farmers based on the indicators of Managerial factor

Sl. no	Indicators of Managerial factor	Organic (n = 75)		Conventional (n = 75)	
		Mean Score	Percent age	Mean Score	Percent age
1	Planning	2.88	96.00	2.31	77.00
2	Marketing strategies	2.86	95.33	2.26	75.33
3	Farm supervision	2.82	94.00	2.14	71.33
4	Labour management	2.75	91.67	2.11	70.33
5	Financial management	2.71	90.33	2.08	69.33
6	Information management	2.67	89.00	1.63	54.33
7	Preparing calendar of operations	2.54	84.67	1.55	51.67
8	Timely decision making	2.51	83.67	1.42	47.33
9	Crop surveillance	2.48	82.67	1.23	41.00
10	Utilization of agri-business opportunities	2.41	80.33	1.11	37.00
	Total	26.63		17.84	

Planning, marketing strategies, farm supervision and labour management were the indicators with higher mean scores, which are being adopted by most of the farmers. The practices having lower adoption included: preparing calendar of operations, timely decision making, crop surveillance and utilization of agri-business opportunities. Attention may be given for improving these areas for making the farmers more adaptable to climate change impacts.

4.4.3. Relative importance of the factors of IAC Index.

Principal component analysis was conducted using SPSS, for finding out the relative importance of the indicators of Integrated Adaptive Capacity Index and the results are presented in the Table: 41.

Table: 41. Relative importance of the factors of IAC Index

Sl. No.	Factors	Relative Proportion
1	Socio-economic	0.941
2	Technological	0.924
3	Agricultural	0.922
4	Managerial	0.909
5	Bio-physical	0.897
6	Ecological	0.880

From Table: 41, it is revealed that among the six factors of IAC index, socio-economic (0.941) was found to have the highest proportion followed by technological, agricultural, managerial, bio-physical and ecological factors respectively. The ultimate aim of the farmer is to get financial improvement through farming. For obtaining a better adaptive capacity, economic and social factors are most contributing factors. Therefore, socio-economic factor was the found to be the most contributing factor for adaptive capacity index. The relative proportion of the technological factor was found to be the next important factor, as adoption of appropriate technology can help the farmer to adapt with climate change. Then third important factor was found to be 'agricultural' as the climate resilient agricultural practices can lead to lower susceptibility to climate change impacts. The fourth important factor was managerial, since proper management strategies can be helpful in reducing the ill-effects of climate change and its impacts. The next important factor was bio-physical and the last factor was ecological. All these factors were found to be positively and significantly correlated with the IAC Index.

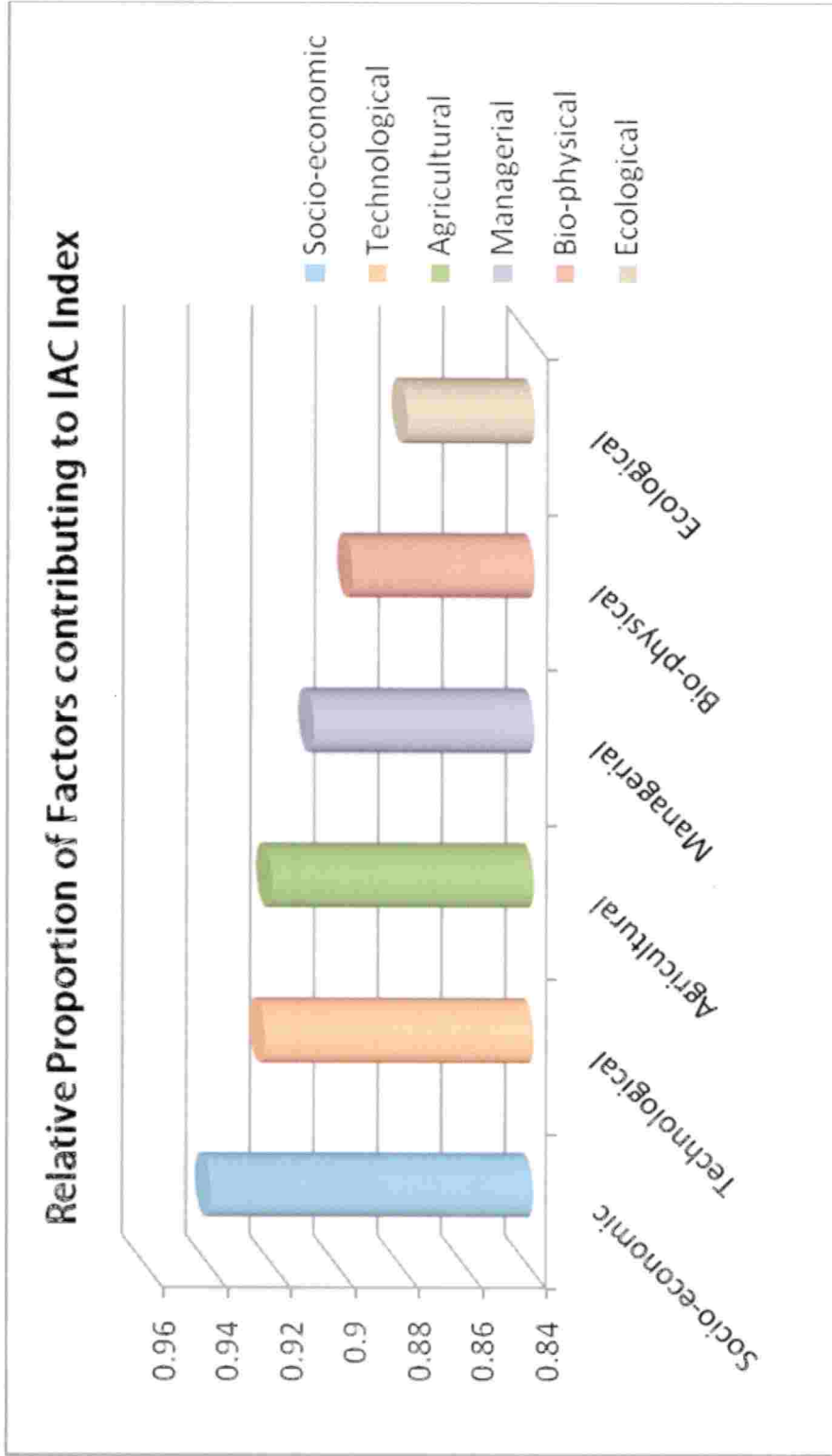


Fig. 37: Relative proportion of factors contributing to IAC Index

4.4.4. Relationship of profile characteristics of the respondents with Integrated Adaptive Capacity (IAC) Index

To find out the relationship of selected profile characteristics of the respondents with the Integrated Adaptive Capacity (IAC) Index, simple correlation analysis had been done, the results are presented in the Table: 42 and discussed below.

Table 42. Correlation analysis of profile characteristics of the respondents with IAC Index

Sl. No	Independent Variables	Correlation Coefficient (n= 150)
1	Age	-0.095 NS
2	Education	0.332**
3	Agri Land holding	0.373**
4	Annual Income	0.335**
5	Farming Experience	0.299**
6	Socio-political participation	0.568**
7	Mass media exposure	0.758**
8	Closeness with Agri support system	0.674**
9	Self confidence	0.880**
10	Farming commitment	0.707**

** Significant at 1 percent level NS - Not significant

From the results presented in Table 42, it could be seen that all the profile characteristics except age had a positive and significant relationship with the integrated adaptive capacity index of the respondents. Hence it is inferred that education, agricultural land holding, annual income, farming experience, socio-political participation, mass media exposure, closeness with agricultural support system, self confidence and farming commitment were significantly and positively influencing the integrated adaptive capacity of the farmers. The results are in confirmation with the findings of Deressa *et al.* (2009), Kimani and Bhardwaj (2015), Javed *et al.* (2015), Ndamani and Watanabe (2016) and Belay *et al.* (2017).

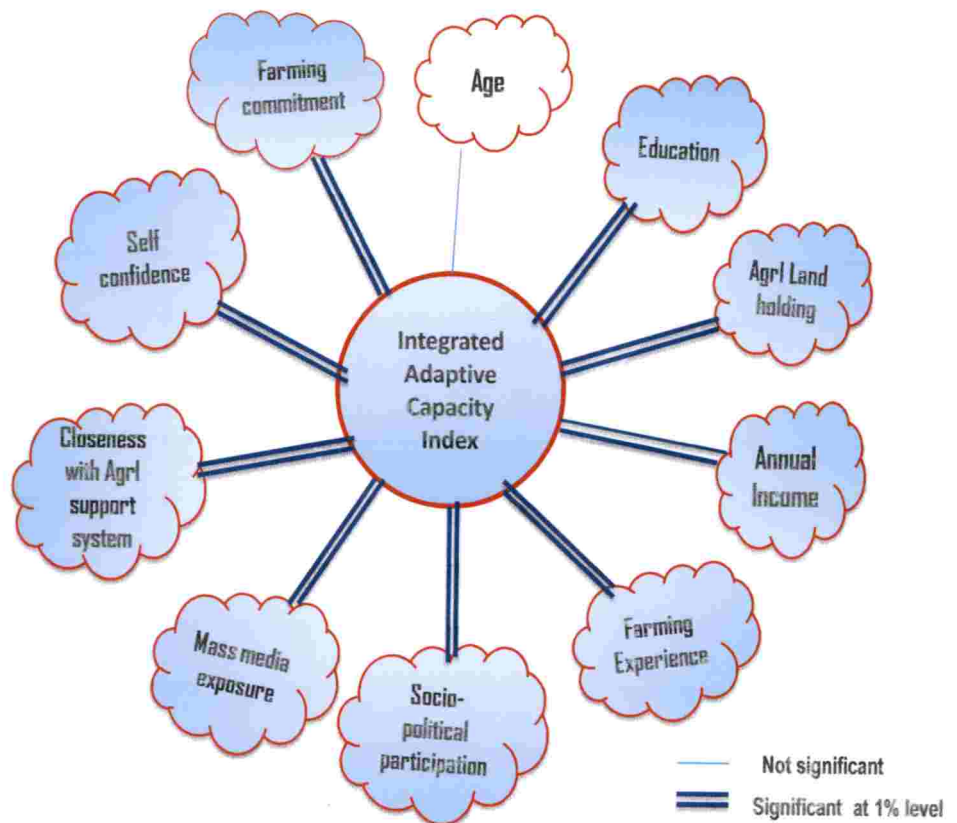


Fig. 38: Correlation between IAC Index of the respondents and their selected profile charecteristics

4.5. Comparison of Organic and Conventional farmers

The comparison of organic and conventional farmers were done based on their profile characteristics, IAC Index,

4.5.1. Comparison of organic and conventional farmers based on their profile Characteristics

The mean score with respect to the selected profile characteristics of the organic and conventional farmers are presented in Table.43.

Table: 43. Comparison of mean scores of selected profile characteristics organic and conventional farmers

Sl. no	Independent Variables	Mean Score		't' value
		Organic farmers	Conventional farmers	
1	Age	2.306	2.45	1.45
2	Education	2.560	1.98	3.97**
3	Agricultural Land holding	2.00	1.52	4.44**
4	Annual Income	2.56	2.17	4.19**
5	Farming Experience	2.88	2.36	2.84**
6	Socio-political participation	5.02	2.46	7.21**
7	Mass media exposure	20.65	14.42	12.10**
8	Closeness with Agri support system	23.86	13.85	19.10**
9	Self confidence	38.10	33.58	9.60**
10	Farming commitment	47.28	38.173	13.73**

** Significant at the 0.01 level

The results showed that the profile characteristics except age were found to be significant at one percent level. Hence it can be inferred the organic and conventional farmers in the study area showed a significant difference with regard to the profile characteristics except 'age'. Also it can be seen from the higher mean scores possessed by organic farmers, that, they have dominated over the conventional farmers with regard to education, agricultural land holding, annual income, farming experience, socio-political participation, mass media exposure, closeness with agricultural support system, self confidence and farming

commitment. This indicate that the organic farmers have higher level of education and are more oriented towards mass media, social interaction, contact with agricultural support system etc. The minimum variation was for ‘farming experience’ and maximum for ‘closeness with agricultural support system’.

Hence it can be concluded that there existed a significant difference between organic and conventional farmers with regard to profile characteristics such as: education, agricultural land holding, annual income, farming experience, socio-political participation, mass media exposure, closeness with agricultural support system, self confidence and farming commitment.

4.5.2. Comparison of Organic and Conventional farmers based on Integrated Adaptive Capacity Index (IACI)

The mean scores with respect to the Integrated Adaptive Capacity of the organic and conventional farmers are presented in Table: 44.

Table: 44. Comparison of Organic and Conventional farmers based on Integrated Adaptive Capacity Index

Sl. no	Variable	Mean Score		‘F’ value
		Organic farmers (n =75)	Conventional farmers (n =75)	
1	Integrative Adaptive Capacity	81.05	46.35	3.905**

** . Significant at 1 percent level

The comparison of the mean scores of IAC index of organic (81.05) and conventional farmers (46.35) clearly indicated that there exist a significant difference between the two groups and the organic farmers were found to be more adaptive. The results care in line with the observations of Reynolds and Nierenberg (2012), Wani *et al.*, 2013), Padel (2013), Muller *et al.* (2016) and Maitra and Zaman (2017).

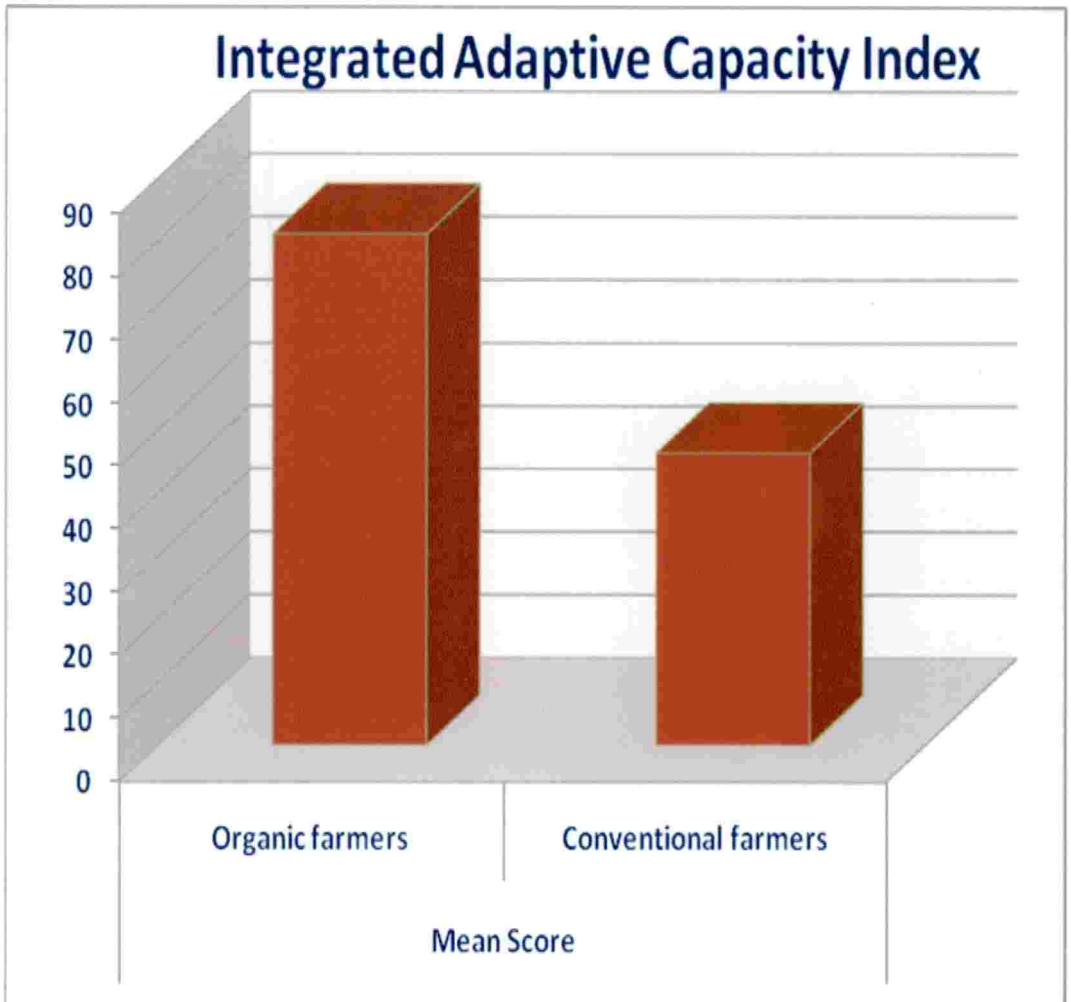


Fig: 39. Comparison of organic and conventional farmers based on IAC Index

It is observed that many people are moving towards farming, as a secondary livelihood option or as a hobby, recognizing the importance of farming as a way for: safe food production, stress relief, satisfying their nostalgic affection towards farming and / or upholding the traditional culture of their forefathers. These groups of people are mainly adopting organic farming as a safe to eat production method. Organic agriculture promotes and enhances agro-ecosystem health, including biodiversity and this is accomplished by using on-farm agricultural practices avoiding synthetic and off-farm inputs. Wani *et al.* (2013), concluded that, organic farming, as an adaptation strategy to climate change and variability, is a concrete and sustainable option and has additional potential as a mitigation strategy. Hence it can be inferred that the organic farmers are more adaptable to the consequences of climate change compared to conventional farmers.

4.5.3. Comparison based on the factors of IAC Index

The mean scores with respect to the factors of Integrated Adaptive Capacity Index of the organic and conventional farmers are presented in table 45.

Table. 45. Comparison of Organic and Conventional farmers based on the factors of Integrated Adaptive Capacity Index

Sl. no	Factors of IACI	Mean Score		z value
		Organic	Conventional	
1	Bio-physical	23.35	13.47	6.98**
2	Agricultural	24.32	10.12	10.04**
3	Socio-economic	22.973	14.00	6.34**
4	Ecological	26.173	17.44	6.17**
5	Technological	22.453	10.573	8.40**
6	Managerial	26.626	17.84	6.21**

z critical: 1.96

**Significant at 1percent level

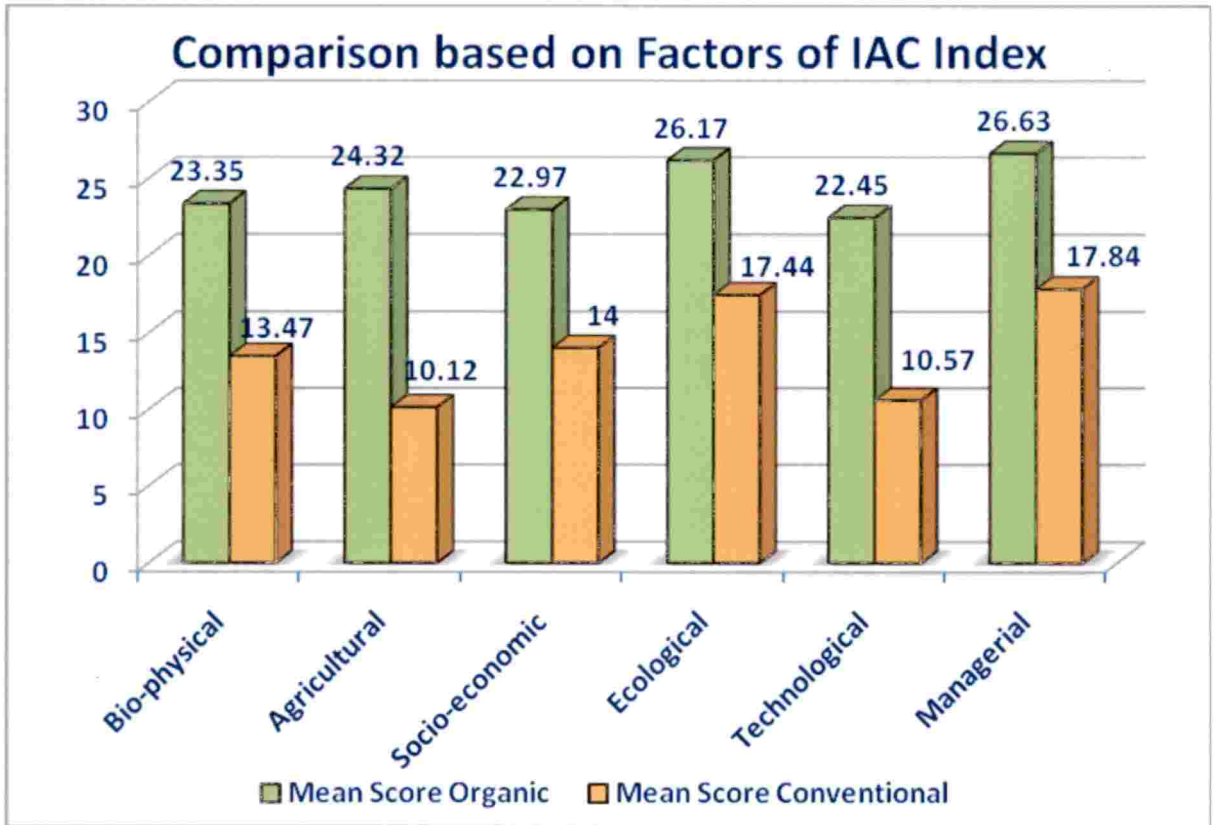


Fig: 40. Comparison of Organic and Conventional farmers based on the factors of IAC Index

From the table: 45, it is clear that there was significant difference between organic and conventional farmers, with respect to the six indicators of Integrated Adaptive Capacity Index, considered in this study. From the results, it could also be seen that the maximum variation between the organic and conventional farmers was with regard to the 'agricultural indicator'. This was attributed to the reason that, the organic farmers are following more climate friendly farming practices than conventional farmers.

Since organic farming includes more climate friendly techniques like rotating and diversifying crops, planting indigenous crop varieties, combining crop and livestock production, reducing soil tillage, using organic manure as fertilizer and growing cover crops, in addition to shrinking the climate footprint of agriculture, many of these practices enhance biodiversity, reduce waste and improve farmers' yields and incomes (Reynolds and Nierenberg, 2012). Organic production systems are based on specific standards precisely formulated for food production and aim at achieving agro-eco systems, which are socially and ecologically sustainable (Devakumar and Shankar, 2014).

The comparison of the mean scores of the farmers with respect to the bio-physical, agricultural, socio-economic, ecological, technological and managerial indicators of IAC index revealed that the organic farmers have better adaptive capacity than conventional farmers.

4.5.4. Comparison of AE Units based on Integrated Adaptive Capacity Index

The AE Unit wise comparison revealed that the farmers of South central laterites exhibited the highest IAC index (organic- 87.73, conventional- 48.74) followed by the farmers of Southern coastal plain (organic - 78.54, conventional- 43.63), Northern foothills (organic - 77.5, conventional- 43.05) and Northern laterites (organic - 77.37, conventional- 42.98).

Table: 46. Comparison of AE Units based on I AC Index

Category	Organic	Conventional	t- value
	Mean		
AEU9 (n =25) South central laterites	87.73	48.74	2.01**
AEU1 (n = 13) Southern coastal plain	78.54	43.63	2.06**
AEU13 (n = 12) Northern foothills	77.5	43.05	2.07**
AEU11 (n = 25) Northern laterites	77.37	42.98	2.01**

The higher IAC index of the south central laterites can be attributed to the distribution of rain fall throughout the year, better socio economic back ground of the farmers and more access and orientation of the farmers towards agricultural support systems like Department of Agriculture, crop research stations, KVKs and other agricultural institutions and agencies, compared to the farmers of northern AE units. The farmers in the southern parts of Kerala were found to be better in utilizing the information support system providing by different systems and agencies related to agriculture.

Even though the quantity of rainfall is more in northern region, the availability of rain fall is confined and as a result, the dry spells are more than the southern and central AE units of Kerala. Availability of water is a major element of crop production and for ensuring continues water availability, irrigation methods need to be strengthened.

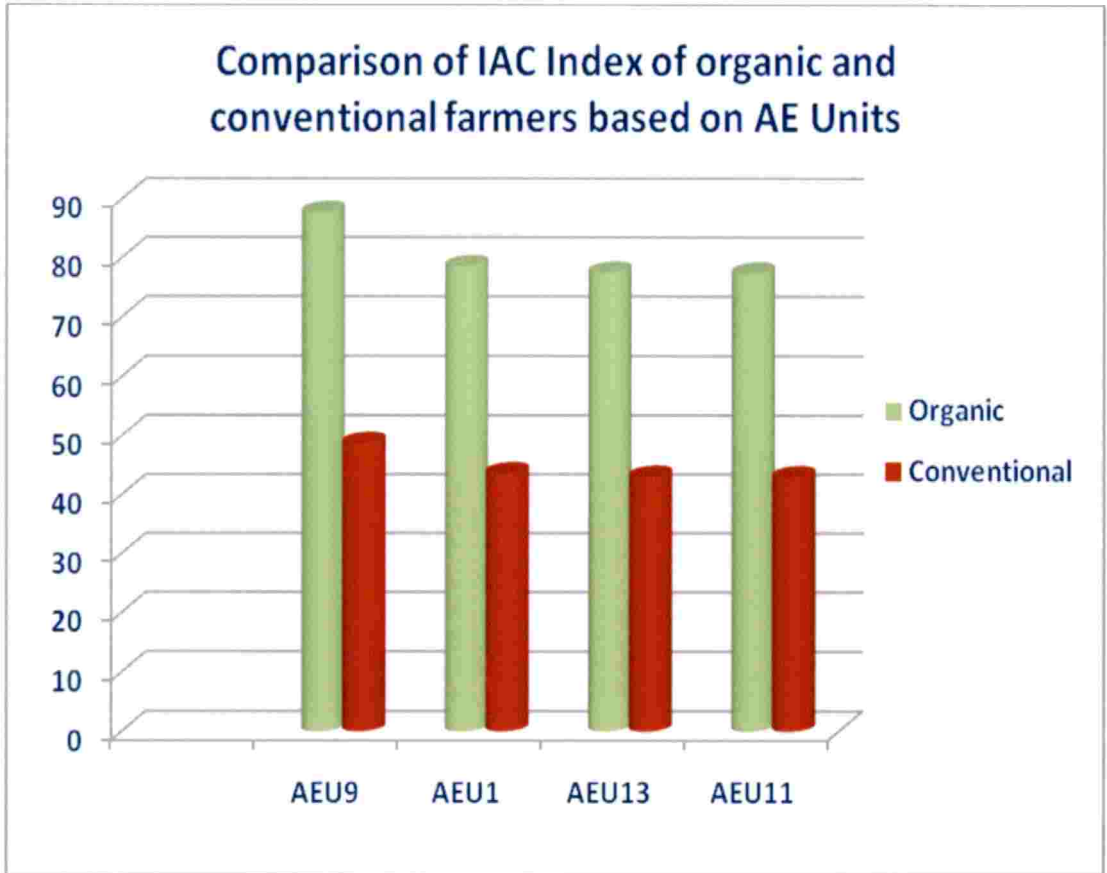


Fig. 41: Comparison of organic and conventional farmers based on AE Units

4.6. Analysis of Agro-ecological profile of farms

The agro ecological profile of the organic and conventional farms recorded through field visit, farmer survey and observation of the researcher is summarised as follows:

Table: 47. Agro-ecological profile of the organic and conventional farms

Sl. No.	Farm characteristic	Category	Score range	Organic (n = 75)		Conventional (n = 75)	
				Frequ ency	%	Frequ ency	%
1	Crop diversity	Low	<1	0	0.00	10	13.33
		Medium	1-2	25	33.33	40	53.33
		High	3-5	50	66.67	25	33.33
2	Diversified land use	Low	<1	0	0.00	14	18.67
		Medium	1-2	30	40.00	35	46.67
		High	3-5	45	60.00	26	34.67
3	Live stock component	Low	0-1	5	16.00	33	44.00
		Medium	1-2	10	30.67	27	36.00
		High	3-5	60	80.00	15	20.00
4	Production potential	Low	<1	20	26.67	16	21.33
		Medium	1-2	31	41.33	39	52.00
		High	3-5	24	32.00	20	26.67
5	B:C Ratio	Low	<1	10	13.33	15	20.00
		Medium	1-2	35	46.67	38	50.67
		High	>2	30	40.00	22	29.33

The results indicated that the majority (66.67%) of the organic farms were having crop diversity and majority of the conventional farms (53.33%) were having medium level of crop diversity. Majority of the organic farmers were having an integrated farming system comprising of field crops, vegetables, fruit

cultivation, agro-forestry, dairy, sheep and goat rearing, fishery, poultry, duckery, pigeon, biogas, mushroom, sericulture, bee keeping and by-product utilization of crops which are helping to increase the income and standard of living of the farmers. The cropping pattern of the conventional farmers was dominated with mono crop / mixed farming system. When 60 per cent of the organic farmers were followed a diversified land use, only 46.66 percent of the conventional farmers were having the diversification of land. So also, a great majority (80%) of the organic farmers were having livestock component and majority of the conventional farms (44%) were falling under lower category. For production potential and B:C ratio, majority of organic and conventional farms belonged to medium category.

The results are on par with the findings of Eyhorn (2007) who conducted the study to find out how far conversion to organic management can be a viable option for improving the livelihoods of cotton farmers in India, revealed that due to 10–20 percentage lower production costs and a 20 percentage organic price premium, average gross margins from organic cotton fields were, depending on the year, 30–40 percentage higher than in the conventional system.

From results, it can be inferred that the organic farms possess a better adaptation potential as there is more crop diversity with integration of diversified farm components.

4.6.1. Comparison of organic and conventional farms based on soil and plant analysis

The farmers with maximum integrated adaptive capacity index from same locality had been selected for analysing plant and soil samples in order to assess the pesticide residue level and nutrient availability.

The results of the pesticide residue level was found to be 'nil' for both organic and conventional farms, which indicated that the use of chemical pesticides was very limited and even if the chemicals were used, it was within the safety limits.

Soil sample analysis had been conducted for knowing the nutrient availability in the soil and the results are given below:

Table: 48. Results of soil sample analysis of organic and conventional farmers with maximum adaptive capacity

Sl. no	Particulars	Organic		Conventional	
		Quantity	Inference	Quantity	Inference
1	p ^H	5.36	Acidic	5.55	Acidic
2	CEC	0.08	Insufficient	0.08	Insufficient
3	Organic carbon (%)	3.375	More	2.85	More
4	Phosphorous (kg/ ha)	32.15	More	13.61	Insufficient
5	Potassium (kg/ ha)	128.8	Medium	224.0	Medium
6	Calcium (ppm)	548	Normal	810	Normal
7	Magnesium (ppm)	50.50	Insufficient	37.75	Insufficient
8	Sulphur (ppm)	41.35	Normal	32.16	Normal
9	Iron (ppm)	16.9	More	15.30	More
10	Manganese (ppm)	12.3	More	5.75	More
11	Zinc (ppm)	3.31	Normal	1.15	Normal
12	Copper (ppm)	5.88	More	4.26	More
13	Boron (ppm)	0.51	Normal	0.59	Normal

From the table it can be seen that there is not much difference between organically and conventionally managed plots in the case of nutrient availability, even though the conventional farmers apply more chemical fertilisers.

4.6.2. Indigenous Farming Practices identified

Farmers were found to be experimenting with different organic products for crop protection as well as for improved crop productivity. From among these, two unique products which were found to be very effective and promising as per the farmers in the study area are given below:

4.6.2.1. 'Navagavyam'- Organic plant health and protection product

It is a farmer innovation of health mix for crops with nine natural and available organic ingredients, which they claim to help to improve the vigour and vitality of crops, soil microbes, resistance against pest and diseases and the productivity of the crops.

Preparation of 'Navagavyam'- with 9 ingredients

Ingredients and quantity required

- | | |
|--------------------------|-----------|
| 1. Fresh Cow dung | – 1 kg |
| 2. Ghee | – 250g |
| 3. Cow urine | – 4 litre |
| 4. Milk | – 2 litre |
| 5. Curd | – 2 litre |
| 6. Tender coconut water | – 2 litre |
| 7. Plantain- Palaynkodan | – 10 kg |
| 8. Jaggary | – 15 kg |
| 9. Toddy | – 2 litre |

Method of preparation:

Mix fresh cow dung and ghee well in a vessel, and then add cow urine, milk, curd, tender coconut water, plantain, powdered jaggary and toddy. Mix well and cover the top of the vessel properly. Keep under shade for 20 days and stir the mixture every day. From 21st day onwards, it can be used by spraying/pouring the crop basins after diluting by adding 29 litres of water to 1 litre 'Navagavyam'. This can be used for 6 months.

4.6.2.2. 'Sasyamritham'

It can be used as a bio-pesticide against different pests like thrips, bugs, hoppers, fruit flies etc.

Ingredients required

1. Asafoetida (Pal kayam)- 25 g
2. Camphor (Pacha karpooram)- 25 g
3. Aloe vera (Chenninayakam) – 50 g
4. Raw bark of Strychnos nux-vomica (Kanjiram)- 50 g (make powder)
5. Burnt lime (Neettu kakka) – 200 g
6. Chilli (Kanthari) - 50-100 g
7. Garlic – 50 g
8. Lemon – 2
9. Neem oil – 50 g
10. Cow's urine – 1 l

The 200 g lime should be mixed with 2-3 l water and keep for 6-7 hours and take the solution, removing the sediments. Mix the ingredients asafoetida, camphor, chenninayakam and powdered raw bark of Kanjiram in to this solution and keep it for 2 days, stirring every day. After that on the third day, mix a paste of chilli- garlic and lemon, in to it and then pour 1 l cow's urine. This can be used by diluting with 3-5 l of water.

4.6.2.3. Explode - organic plant protection product

A farmer made plant protection liquid for controlling pest attack with cow urine and glyricidia.

Method of preparation

Add 2 kg glyricidia leaves to 1 litre cow urine and keep for 15 days. Once in three days the mix should be stirred well. After 15 days, the squeeze out the juice, sieve and use by diluting with one litre water to 50 ml juice and adding chilli/ ginger and bar soap for spraying to crops.

4.6.2.4. The other practices reported by the farmers were:

- (i) Spraying papaya leaf juice for pest control
- (ii) Leaves and flowers of Peruvalam (*Clerodendron infortunatum*) for control of hoppers and white fly.
- (iii) Juice of Glyricidia and Thanni (*Terminalia bellerica*) leaves for pest control
- (iv) 2 spoons of Turmeric + 1 spoon Lime (chunnambu) – mix in 1l water and use for controlling pests
- (v) Burying cut hair on the basin of lemon and pomegranate for increasing productivity.
- (vi) Giving personal care and talking to plants were found to be positive response for plant growth and production.
- (vii) Sprinkling ash on the top and bottom portion of leaves of crops for protecting against pests.

4.7. Case study of selected farmers with higher IAC Index

From each selected AE unit one farmer with highest IAC index was selected and details were collected using interview and observation method. The list of selected farmers was as follows:

Sl. No.	AEU	Farmer name
1	1- Southern coastal plain	Robinson, Kattayikkonam
2	9- South central laterites	Narendranath, Kottarakkara
3	11- Southern coastal plain	Sajith, Koothuparambu
4	13- Northern Laterites	Agasthi, Perumattikkunnu

Farmer 1. Sri. Robinson, Kattayikkonan



Farmer 2. Sri. Narendranath, Kottarakkara



4.7.1 Farmer 1. Sri. Robinson, Kattayikkonan

Address: Sri. Robinson, Sheeja Bhavan, Kallukunnu, Kattayikkonam

Phone: 9846617848

Sri. Robinson, 64 years old residing at Kazhakuttam Panchayath, Thiruvananthapuram district, coming under Agro Ecological Unit no. 1, Southern coastal plain, was having 47 years of farming experience. He started farming from the very young age and practicing organic farming for more than 10 years. He is having more than 5 acres of land, following an integrated farming system.

The major crops cultivated in his farm were: paddy, coconut, banana, vegetables, tuber crops, betelvine, ginger, turmeric, ornamental plants etc. He was following diversified cropping pattern by integrating different farming components like, crop cultivation along with live stock rearing- cow and goat, poultry- hen, duck, ornamental birds like emu, pet animals- different types of dogs, vertical farming, aqua culture, bio-gas unit, medicinal plants, organic manure - vermi- compost unit etc.

4.7.2. Farmer 2. Sri. Narendranath, Kottarakkara

Address: Sri. Narendranath, Mevarathu Veedu, Prunkulam. P.O., Kottarakkara.

Phone: 9048471906

Sri. Narendranath, 58 years old residing at Kottarakkara Panchayath, Kollam district, coming under Agro Ecological Unit no. 9, South central laterites, was having 35 years of farming experience. He is a certified organic farmer by INDOCERT from the year 2005 onwards. He is having 13 acres of land in which 10 acres are wet land, cultivated with organic rice. He is undertaking the farming by keeping all the standards specified for organic certification. He won many awards and recognitions in the field of farming.

In his opinion, there will be yield reduction during the first three years and then the yield is found to be stabilized and improving during further years. Also he stated from his experience that the quality of organically raised crop products is better than the conventional products in taste and appearance. He is producing

Farmer 3. Mr. Sajithkumar, Koothuparambu





different organic products like 'sasyamrutham' for plant growth promotion and protection.

4.7.3. Farmer 3. Mr. Sajithkumar, Koothuparambu

Address: Kanivayal House, Kuthuparamba, Kannur

Phone: 9747305667

Mr. Sajithkumar, 38 years old residing at Kuthuparamba Municipality area, Kannur district, coming under Agro Ecological Unit no. 11, Northern laterites, is having 6 years of farming experience. He is working as a school teacher and undertaking farming as a passion. His family members- wife and children are also helping him in undertaking different farming activities. He had received Kannur district level best mixed farmer award during the year 2016.

Mr. Sajithkumar's farm is a model farm in which different units are arranged neatly and systematically in an attractive manner. He is following integrated farming system and organically cultivating upland rice, banana, vegetables, medicinal plants, etc. integrating with livestock- cow, goat, poultry- chicks, hen, duck, ornamental birds etc. His home is located in the midst of ornamental as well as other cultivated plants, pet and other animals, pond and other farming units, neatly and beautifully arranged which attracts each visitor. ATMA is using his home as farm school and the farm is really a feast to the eyes of the visitors.









4.7.4. Farmer 4. Sri. Augasthi Perumattikkunnel

Address: Perumattikkunnel, Palavayal.m.P.O., Chrupuzha, kasaragod

Phone: 9400412077

Sri. Augasthi, 65 years old residing at East Eleri Panchayath, Kasaragod, coming under Agro Ecological Unit no. 13 - Northern foothills, is having 48 years of farming experience. He had won state level best bio-farmer award for the year 2015 and got recognition from different agencies at local level. He was following an integrated farming system and having more than 11 acres of land.

Farmer 4. Sri. Augasthi Perumattikkunnel

	
	
	
<div style="background-color: #f0f0f0; padding: 10px; border: 1px solid #ccc;"> <p style="color: #e67e22; font-weight: bold; margin-bottom: 5px;">മിഴി സസ്യ വികസന സ്കീം</p> <p>സ്രീ. അഗസ്തി, പറുമത്തിക്കുന്ന്, പത്തനംതിട്ട ജില്ല, കേരളം</p> <div style="display: flex; align-items: flex-start; margin-top: 10px;">  <div style="font-size: 0.8em; line-height: 1.2;"> <p>മിഴി വികസന സ്കീം കീഴിൽ തിരുവനന്തപുരം പ്രദേശത്ത് തിരുവനന്തപുരം സർവ്വതലമത്സരത്തിൽ മത്സരിക്കാനായി പങ്കെടുത്തു. മത്സരത്തിൽ മികവുറ്റ പ്രകടനം കാഴ്ചവെച്ചു. മത്സരത്തിൽ പങ്കെടുത്ത സാധനങ്ങൾക്ക് മികച്ച ഗുണമേന്മയുള്ളതായി തിരുവനന്തപുരം സർവ്വതലമത്സര ജuradoർമാർക്ക് അഭിപ്രായപ്പെട്ടു. മത്സരത്തിൽ പങ്കെടുത്ത സാധനങ്ങൾക്ക് മികച്ച ഗുണമേന്മയുള്ളതായി തിരുവനന്തപുരം സർവ്വതലമത്സര ജuradoർമാർക്ക് അഭിപ്രായപ്പെട്ടു.</p> </div> </div> </div>	

Sri. Augusthy is a strong follower of organic farming and successfully undertaking organic farming for more than 20 years. He is cultivating different crops like coconut, arecanut, cocoa, rubber, garcinia, vanilla, tuber crops, pepper, ginger, turmeric, vegetables etc. along with live stock-cow- Kasargod dwarf a local variety, goat, hen, quail, honey bee etc. He is producing a variety of bio-products suitable for plant growth promotion and pest and disease control and selling these products locally. He is active in social activities and is acting as the vice- president of Kerala Jaiva Karshaka Samithi. He is an active member of FTAK- Fair Trade Alliance of Kerala and marketing of organic agricultural products are undertaken through this organisation. He is utilising almost all the inputs required for farming from his on farm, without buying from outside. His policy is to utilise maximum sunlight for crop production, using different types of crops which is helping to get year round income. He said that most of the farmers are thinking farming means vegetable cultivation, but to be a successful farmer one should integrate different types of short, medium and long duration crops as well as perennial cash crops like coconut, rubber, nutmeg, along with live stock and other agro-based income generating units such as: honey bee rearing, bio-production units, value added products from farm etc. linking with some farmer based marketing agencies like Fair Trade Alliance.

Inference: All these farmers were undertaking organic farming integrating with animal husbandry, fodder cultivation, honey bee rearing, bio-products, vermi- composting, bio-gas unit, etc so that assured income is obtained throughout the year from diversified farm components. These farmers received many awards and appreciations from Govt. Of Kerala for their outstanding achievements in the field of farming and can be considered as successful models of organic farming.

4.8. Constraints as perceived by the farmers.

Constraint analysis is one of the important components of extension research. In order to formulate an extension strategy for climate change adaptation, we should know the problems or constraints faced by the famers, for which suitable remedial measures or tackling strategies can be identified.

Table: 49. Constraints as perceived by the farmers

Sl. No.	Constraints	Mean Score	Rank
1.	Marketing problems	72.17	1
2.	Lack of timely weather forecasts and its access to farmers	71.5	2
3.	Risk due to uncertain weather parameters	69.77	3
4.	Inadequate storage and transportation facilities	64.54	4
5.	High cost of inputs	57.85	5
6.	Inadequate labour availability	55.18	6
7.	Inadequate input supply agencies/ system	48.93	7
8.	Non- availability of organic inputs	48.55	8
9.	Inadequate institutional support	43.7	9
10.	Lack of timely dissemination of appropriate technology for the needy farmers	40.72	10
11.	Lack of need based training programmes	40.53	11
12.	Inadequate infrastructural facilities	40.13	12
13.	Lack of farmer participatory research	34.24	13

The major constraints as perceived by the farmers were: marketing problems (72.17%), lack of timely weather forecasts and its access to farmers (71.5%), risk due to uncertain weather parameters (69.77), inadequate storage and transportation facilities (64.54%), high cost of inputs (57.85%), inadequate labour availability (55.18%), inadequate input supply agencies/ system(48.93%), non-availability of organic inputs (48.55), inadequate institutional support(43.7%), lack of timely dissemination of appropriate technology for the needy farmers (40.77%), lack of need based training programmes (40.53%), inadequate infrastructural facilities (40.13%) and lack of farmer participatory research (34.24%).

Among the marketing problems, inadequate price to the farm produces, loss due to transportation, no enough facilities in the existing market, exploitation by middlemen etc were included. Direct marketing facility is ultimately needed for the farmers to sell their products, avoiding middle men will help the farmers to fetch a reasonable income from their farm produces.

Lack of timely weather forecasts and its access to farmers was the second important constraint. Weather forecasts and related information are needed to make aware the farmers about the changing weather patterns enabling them to adjust or change cropping pattern and adoption of appropriate remedial measures accordingly. Even though KAU is giving Agromet services, the number of farmers benefitting is very less. It is needed to be published through mass communication media reaching to a wide range of farmers, helping to address the problems related to climate change and its adaptation.

Risk due to uncertain weather parameters was the third important constraint faced by the respondent farmers. Climate change affects the frequencies with which particular weather occurs, including the frequencies of extreme weather, such as heavy rain, storms, heat waves and drought etc. Recently more frequent weather extremes are reported which cause heavy loss to farmers, affecting crops, livestock, soil and water resources, etc. Prudent programs to adapt to current and future climate change must be taken care of by taking these changing probabilities into account.

Inadequate storage and transportation facilities, high cost of inputs, inadequate labour availability, inadequate input supply agencies/ system, non-availability of organic inputs were the other important problems facing by the farmers. Inadequate institutional support, lack of timely dissemination of appropriate technology for the needy farmers, lack of need based training programmes, inadequate infrastructural facilities were the next important constraints as suggested by the farmers. Many farmers are ignorant about their field's conditions like ground water capacity/ level, soil nutrient status and other soil characteristics. Trainings and awareness classes are needed to equip the

propose remedial measures then and there. Many farmers are willing to undertake more field crops, but the support system services they are getting from the agricultural Dept. is limited or inadequate while considering the demand. Therefore it is proposed to appoint more field level staff for attending field problems so that the farmers will get advices directly and effectively.

Lack of farmer participatory research, was another constraint as suggested by the respondents of the study area. There are many innovative farmers who can be utilized for identifying practical field problems and remedial measures through their valuable experience and knowledge. Even though such research works are conducted here and there, more research projects should be promoted to accomplish fruitful results for the benefit of farming community.

4.9. Empirical model of the study

Based on the results of the study an empirical model was prepared as given in figure: 42. An index for measuring the Integrated Adaptive Capacity (IAC) was developed. The factors of Integrative Adaptive Capacity identified were socio-economic, technological, agricultural, managerial, bio-physical and ecological. The Integrated Adaptive Capacity (IAC) index was calculated as the composite measure of these six factors. All the six factors were found to be positively and significantly correlated with the IAC Index. Among the six factors of IAC index, socio-economic factor was found to be the most contributing one followed by technological, agricultural, managerial, bio-physical and ecological factors respectively. The results of correlation analysis revealed that the personal and socio-psychological characteristics such as: education, agricultural land holding, annual income, farming experience, socio-political participation, mass media exposure, closeness with agricultural support system , self confidence and farming commitment were significantly and positively influencing the integrated adaptive capacity of the farmers.

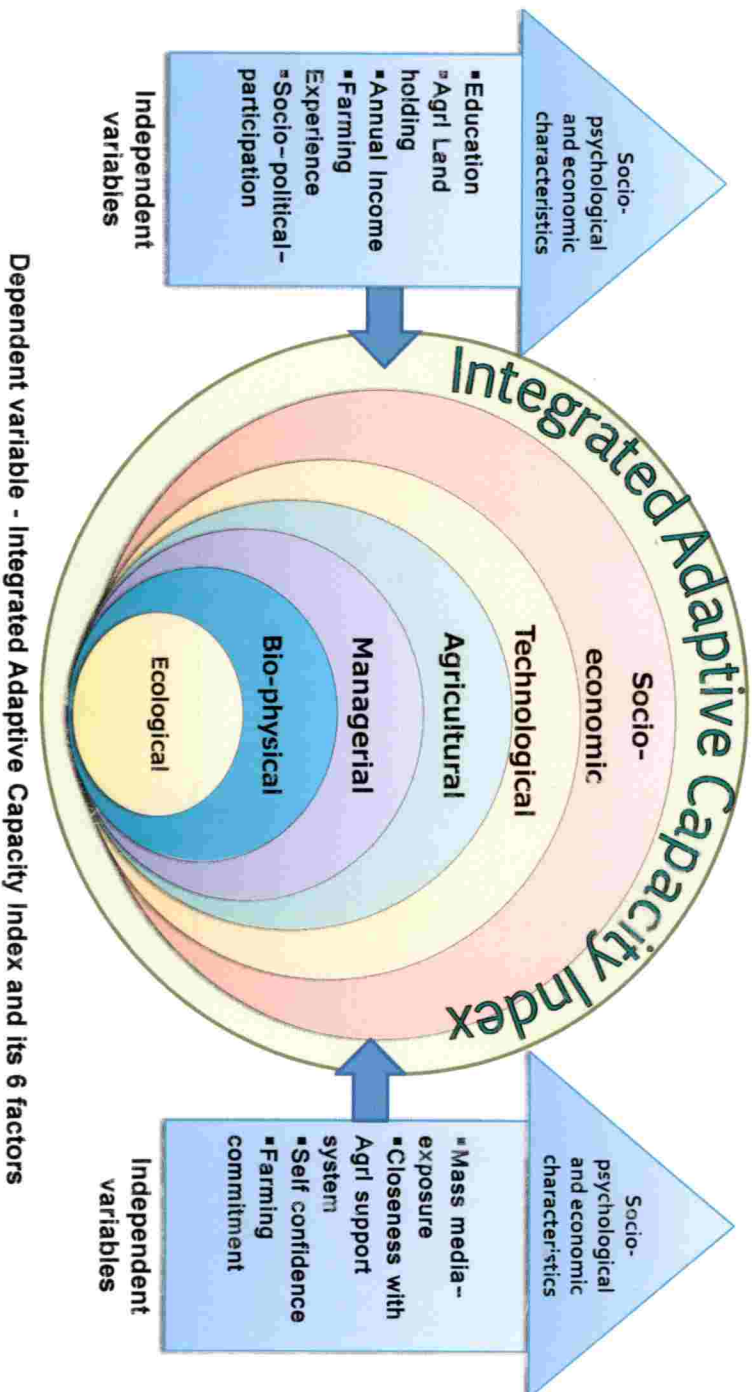


Fig. 42. Empirical model of the study

4.10. Formulation of a workable climate change adaptation strategy for sustainable crop production in Kerala.

As the farmers are already experiencing greater uncertainty in crop production problems due to climatic variability and changes, it is highly necessary to adopt a sustainable approach for agricultural production.

Smith *et al.* (2001) pointed out that enhancement of adaptive capacity is a necessary condition for reducing vulnerability, particularly for the most vulnerable regions and socioeconomic groups. Adaptive capacity to deal with climate risks is closely related to sustainable development and equity. So, enhancement of adaptive capacity is fundamental to sustainable development.

In this study, the concept of integrated adaptive capacity is formulated by strengthening the potential of the farmers to substantially reduce the adverse impacts of climate change and enhance beneficial impacts without leaving residual damage. Therefore, the strategies for climate change adaptation required at different levels such as: Farmer, Extension delivery system, Research and Government are given below:

4.10.1. THE MAJOR STRATEGIES AT FARMER LEVEL:

1. Adopting locally-relevant climate-smart agricultural practices
2. Changes according to seasonal/ climatic variability
3. Use of climate resilient/ tolerant varieties- Eg. tuber crops
4. Mulching with crop residues
5. Diversified land use
6. Integration of live stock component
7. Application of organic manures/ bio-fertilizers increase organic matter in the soil
8. Crop rotation
9. Soil and water conservation measures
10. Integrated farming system
11. Sustainable pest and disease management
12. Building terraces to avoid erosion
13. Changing planting practices
14. Minimum Tillage (after double digging)

15. Cover cropping
16. High density and diversified agro-forestry with leguminous trees
17. Use of traditional seeds
18. Managing proper irrigation and drainage measures
19. Integrated Livestock management- reintegration of livestock with crop activities- building protective sheds for livestock
20. Identify the crop suitability and promote most adaptable crops for the area/ location
21. Adopt soil and water conservation measures.
22. Windbreaks -Plantation of living fences against hot and dry wind
23. Maintaining farming eco-system biodiversity- Increased diversity of species and varieties- conservation- species richness
24. Local resource utilization- Ensure to make best use of the available resources of the locality for farm production purposes
25. Preservation of natural vegetation- taking care of the environment today so that the next generation can enjoy the same amenities and natural beauty as we do.
26. Use of renewable energy sources and environmental friendly equipments for farm operations
27. Modification of the microclimate through the use of shade netting, poly houses/ rain shelter etc.

4.10.2. THE MAJOR STRATEGIES AT EXTENSION DELIVERY SYSTEM LEVEL

1. Providing weather forecasts and early warning systems
2. Pest and disease surveillance and forecasting
3. Encourage rain water harvesting and recharging measures
4. Implement climate resilient measures for assuring the stability of the system
5. Support livelihood diversification (e.g. mixed cropping, mixed farming, off-farm activities)

6. Provide incentives for farmers to continue farming particularly organic farmers for the first three years/ until stabilizing the crop yield.
7. Sensitization campaign for judicious use of natural resources
8. Help the farmers to retain or secure market access and producer groups
9. Support farmer innovators' network and exchanges
10. Link vulnerable farmers with social protection measures using public or other development agency/ PPP based farmer service system.
11. Crop insurance- promoting crop insurance for getting income during crop loss due to climate change/ variability
12. Provide trainings and farmer-to-farmer learning on sustainable agricultural practices and climate change adaptation techniques. Improve awareness/ knowledge level about climate change using both traditional media and Modern ICT tools
13. Farmers need to be engaged in the participatory planning of climate-smart agriculture and work jointly with technical specialists and extensionists to develop the set of locally-relevant climate smart/ friendly agricultural practices.
14. Support learning and exchanges between farmers and communities on adaptive strategies.
15. Utilisation of social networks and institutional/organisational support- Alerting farmers to adapt through electronic / Social Medias and networks
16. Support access of farmers and farmer groups to weather, seasonal forecasting and early warning systems, with attention to user uptake and own knowledge.
17. Encourage community radio, participatory video, animation programs etc., for extension and advocacy on climate change mitigation/adaptation.
18. Explore the use of mobile phone technology for climate change information exchange.

19. Forecasting - for making predictions of the future based on past and present data and analysis of trends in climatic variability and taking precautions for adaptive measures.
20. Marketing management- the selection of marketing channels, price and profit from cultivation of crops and marketing of farm produces.
21. Promote energy saving -concern about greenhouse gas emissions and climate change, the value and need of sustainable energy sources and taking steps towards energy efficiency and conservation.

4.10.3. THE MAJOR STRATEGIES AT RESEARCH SYSTEM LEVEL

1. Identify technologies with mitigation and adaptation synergies
2. Preserving genetic resources of crops and animals for developing resilience to shocks
3. Developing climate resilient varieties
4. Seek funding to support the transition to more climate friendly farming methods and ecosystem stewardship
5. Monitor how climate change and other stressors affect markets and trade in commodities and the economic impacts
6. Income generation - adequate research for improving the net income from farming
7. Create new linkages with on-going action research in adaptation with universities, national agricultural research systems and adaptation programmes
8. Development of technologies to improve water productivity and water use efficiency
9. Development of innovative training techniques for capacity building for improving the farmers' ability to prioritize, change or delay different farm activities and intelligent use of available resources for combating the effects of climatic changes.
10. Value addition of agricultural products enabling preservation and risk reduction.

4.10.4. THE MAJOR STRATEGIES AT GOVERNMENT LEVEL:

1. Providing additional access to credit and saving mechanisms establishing efficient transporting and marketing facilities avoiding middle men for getting reasonable income to the farmers
2. Establishing efficient transporting and marketing facilities avoiding middle men for getting reasonable income to the farmers- Start fair trade model marketing centres throughout Kerala for procuring and marketing of farmer produces.
3. Promote diversification of income sources as well as income and asset building
4. Participatory planning to develop locally-relevant climate-smart agricultural practices and involvement in participatory adaptation processes
5. Promote measures for generating returns on a regular basis. Ensure sufficient return for livelihood support.
6. Credit access- the availability and reach to funding for supporting transition to climate friendly farming practices.
7. Design and develop the infrastructure specifically to increase resiliency and reduce risks from climate extremes. Resource accessibility- Fundamental facilities and systems serving for farm production
8. Encourage education on disaster risk reduction and climate change in schools and farmer/worker organisations in particularly at risk locations, ensuring participation from women, children and the elderly
9. Awareness programmes for reducing GHG emission, carbon sequestration etc.
10. Availability of raw materials/ inputs- Ensure availability of raw materials required for crop production.
11. Provide funding for climate adaptation activities and research.
12. Promote 'green consumption'-reduced consumption / green or ethical consumption.

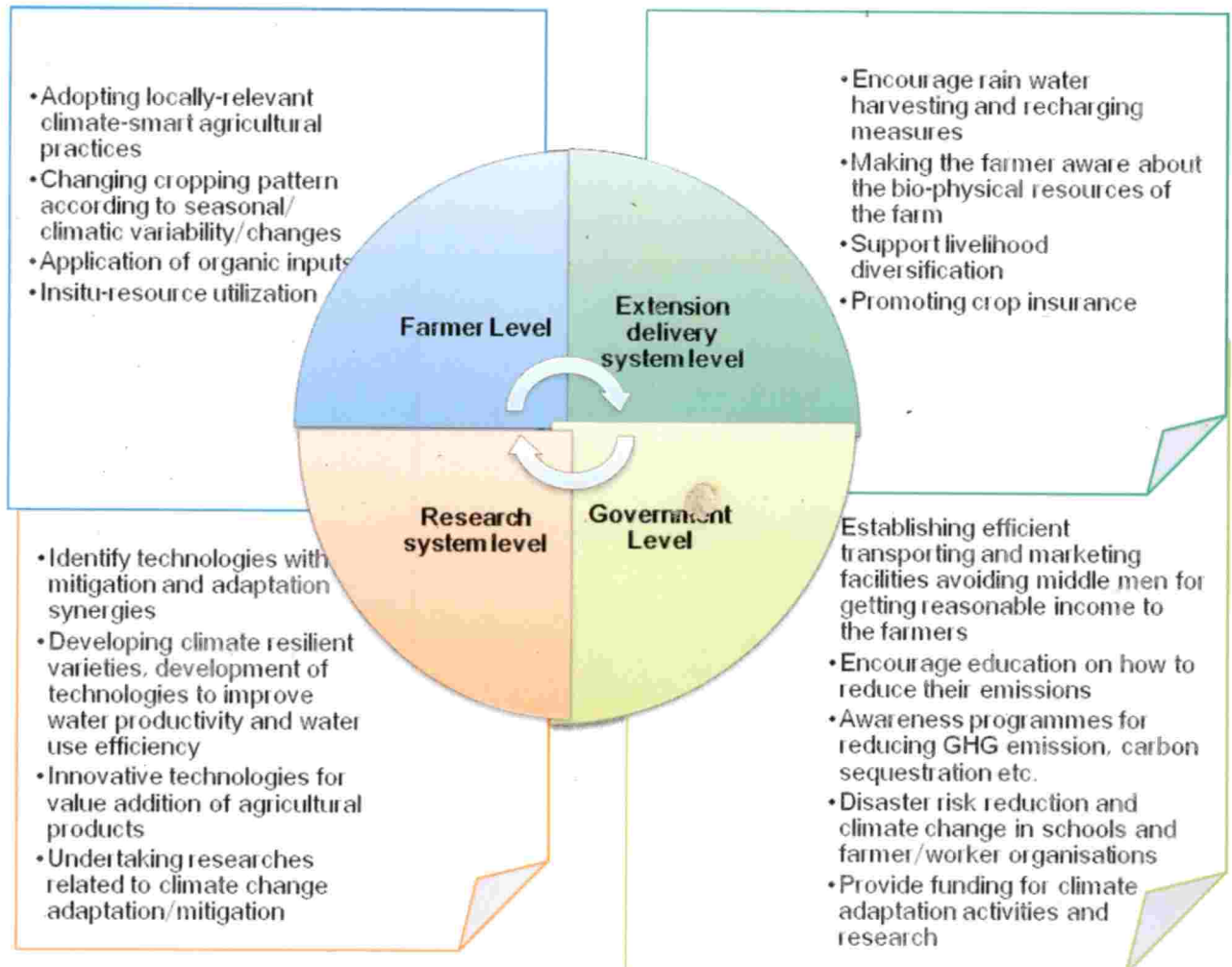


Fig. 43. Strategic model of the study

4.10.5. Recommendations/suggestions

1. Network of meteorological observatories should be increased. Presently, the network of temperature stations under IMD across the State is scarce, though it has a good number of rain gauge stations. Hence, there is urgent need to record surface air temperature across the State. This will provide a better picture of temperature variability over the State under the projected climate change scenario.
2. Presently an “Agromet advisory Board” comprising of scientists from various disciplines viz., Agricultural Meteorology, Agronomy, Horticulture, Plant Pathology, Agricultural Entomology and Agricultural Extension had been constituted by KAU in collaboration with IMD. The members of the Agromet advisory board are consulting at weekly intervals and their expertise is being utilised for preparing the weekly ‘Agromet Advisory Service (AAS) Bulletins’. Measures should be taken for the timely distribution of this ‘AAS Bulletins’ throughout Kerala (a sample ‘Agromet Advisory Service Bulletin’ by KAU, is given in Appendix- V).
3. Climate projections for smaller locations/regions are not available. Hence, there is a need to incorporate downscaling techniques in the GCM models for smaller geographical regions as well.
4. Crop species- specific and location- specific crop weather relationships are to be worked out based on long period experimental data.
5. R & D initiatives are needed in climate change adaptation for sustenance of agricultural production in the State of Kerala.
6. There is a need to train skilled personnel in the field of climate change adaptation and mitigation.

4.11. Future lines of research

The present study was undertaken in the four selected agro- ecological units of Kerala. replicated investigations in the same units as well as continuous research analysis in other AEU's is to be conducted for a better understanding

about the adaptation strategies to be followed in each AE unit. Further separate and detailed analysis of each of the six indicators of Adaptive capacity index can be undertaken.

As crops are more vulnerable to short term variability rather than long term climate changes, the impact of climate variability on crops has to be documented. Detailed investigations are needed for understanding the short and long term effects of climate change in the case of plantation crops through crop-simulation models. Researches for understanding the impact of climate change on crops and simulation models need to be developed /revalidated. Strategies and action plans to be developed for each AEU for climate change adaptation ensuring sustainable livelihood for the farmers. Location specific adaptation programs and activities focusing on soil and water conservation for minimizing the impacts of climate change will be promoted.

Conclusion

It is clear from several studies and reports that climate change will have significant impacts on agriculture, natural resources, ecosystem and bio-diversity. Climate friendly agriculture can play a critical role in carbon sequestration and reduction of greenhouse gas emissions, providing sustainable livelihood to the global population. Green economy in the context of sustainable development and poverty eradication will enhance our ability to manage natural resources sustainably lowering the negative environmental impacts, increasing resource efficiency and reducing waste. Thus from the study, it is concluded that, organic farming can be considered as one of the climate change adaptation strategies, as it provides a wide variety of benefits, along with additional benefits of biodiversity and environmental services, leading to safe food production and livelihood support.

SUMMARY

5. SUMMARY

The study entitled “Organic farming as a strategy for climate change adaptation – An exploratory study” was carried out with the objectives to analyze the integrated adaptive capacity of the organic farmers in comparison with conventional farmers through the development of a measurement tool, namely, Integrated Adaptive Capacity Index; to create a database of the certified organic farms of Kerala and also, to explore the personal, socio-economic and psychological characteristics of the farmers and the agro-ecological characteristics of their farms for formulating a workable climate change adaptation strategy.

The respondents were selected from the agro-ecological units having maximum number of certified organic farmers, namely, AEU9 - South central laterites and AEU11- Northern laterites and minimum number of certified organic farmers namely, AEU 1- Southern coastal plain and AEU13- Northern foot hills. The database of certified organic farmers was prepared by collecting the information from the list of accredited certifying agencies in Kerala and PGS (Participatory Guarantee System) - India.

Developing an index for measuring the Integrated Adaptive Capacity (IAC) of the farmers was one of the major achievements of the study. For that, the factors contributing to the Integrative Adaptive Capacity were identified as: socio-economic, technological, agricultural, managerial, bio-physical and ecological. Each factor of the adaptive capacity index was measured by summing up the scores of indicators delineated through pilot study, expert opinion and judges’ relevancy rating. The Integrated Adaptive Capacity (IAC) index was calculated as the composite measure of these six factors.

The final results obtained are as follows:

1. Inventory of the certified organic farmers of Kerala – prepared by collecting the list of farmers certified by the accredited organic certifying agencies in Kerala and also from PGS-India.

2. Analysis of the personal, socio-economic and psychological characteristics of the respondents

- i) It was observed that majority (47.33%) of the respondents belonged to middle aged category followed by old age (45.33%). The young age category was found to be only 7.34 percent.
- ii) While majority (53.33%) of the organic farmers belonged to middle aged group, majority (52%) of the conventional farmers belonged to old aged group. In both the groups, the number of young farmers were found to be very low (<10 %).
- iii) A great majority of the farmers (more than 90%) in the study area belonged to middle aged group (34-55 years) and old age group (above 55 years). The young age group was only below 10 percent, as they are not interested to consider farming as a livelihood option.
- iv) Majority (41.33%) of the farmers had attained high school level education, followed by higher secondary level (26%), then primary (21.3%) and collegiate level (11.33%).
- v) Majority of the organic farmers (36%) had higher secondary level of education followed by high school (32%), collegiate (17.33%) and primary level (14.67%), whereas a great majority of conventional farmers (50.67%) had studied up to high school level followed by primary school level education (28%), higher secondary (16%) and collegiate level education was found to be only 5.33 percent.
- vi) 46.67 percent of farmers possessed 1 - 5 acres of land and 39.33 percent of farmers had an area below 1 acre. 14 percent of farmers possessed more than 5 acres of land.
- vii) Majority of the organic farmers (52%) were cultivating an area between 1 to 5 acres whereas more than half of the conventional farmers (53.33%) were having an area of below 1 acre under cultivation.

- viii) Majority of the farmers possessed an area of 1 to 5 acres and a very few farmers had more than 5 acres of land holding.
- ix) Almost half of the farmers belonged to medium category, earning between Rupees 50,000 to one lakh. 42.7 percent of the farmers were earning more than 1,00,000/- rupees and a very few farmers (6 % only) were getting less than 50,000 rupees per annum, belonging to low category.
- x) Majority of the farmers (56%) from organic group were getting an income above 1,00,000/- rupees, closely followed by 44 percent belonging to medium category, earning between rupees 50,001 to 1,00,000 per year.
- xi) Majority (56.6%) of the farmers was coming under the high group category with more than 10 years of farming experience.
- xii) A significant proportion (70.7%) of the farmers of organic group had more than 10 years of farming experience, followed by 24 percent and 5.3 percent in medium and low category, respectively. While 42.67 percent of conventional farmers had an experience of more than 10 years belonging to high group category, 33.33 percent belonged to the low group category with less than 5 years experience and 24 percent belonged to medium category with 6 to 10 years of farming experience.
- xiii) Majority of the farmers (56%) had low socio-political participation and 30.7 percent of the farmers were coming under medium category, indicating their participation in social and political activities as a member in such groups. Only about 13.3 percent of farmers were found to be actively engaging with socio-political activities.
- xiv) Almost half of the organic farmers are relating with some kinds of social or political activities, where as 30.7 percent were not having much involvement in such activities and 20 percent of this group were actively participating in social and political activities.

- xv) 56 percent of the total farmers were having medium, 29.3 percent high and 14.7 percent were having low level of mass media exposure.
- xvi) Majority (54.57%) of the organic farmers were regularly using mass medias like news paper, radio, television, agricultural magazines, internet and social medias for getting information related to farming. Nearly half of the balance organic farmers (45.33%) were having medium level of mass media exposure and the farmers falling under the low category was found to be nil. Among the conventional farmers, more than half (66.67%) were having medium level of mass media exposure and 29.33 percent were having low level of exposure with mass media and only 4 percent of the conventional farmers were regularly using mass medias for information gaining.
- xvii) 47 percent of the farmers were coming under medium category as they were having some contact with agricultural support system like Agricultural officers, Agricultural assistants, Agricultural University/College/Scientist, Panchayat, Cooperative society, Bank field officer and/ or Agricultural input dealers. 26 percent of the farmers are regularly in touch with many of the agriculture supporting agencies and only 2 percent of the farmers were coming under low category.
- xviii) Majority of the organic farmers (62.67%) were medium level contacts with agricultural supporting agencies, 34.66 percent has regular contact and only a very low percent (1.3) of organic farmers were coming under low category. In the case of conventional farmers, 75.33 percent were having medium level contact, 17.33 percent were having higher level of association and the remaining 7.33 percent farmers were not having much contact with agricultural supporting systems.
- xix) 66 percent of the farmers were having medium level of self confidence, followed by 23.33 percent of the farmers with high and only 10.67 percent of the farmers with low level of self confidence.

- xx) Majority (54.67%) of the organic farmers had medium level and 44 percent of them were with high confidence level. Only a meagre portion (1.33%) of the organic farmers had low level of self confidence. Among the conventional farmers, 74.67 percent were having medium level of self confidence, 22.67 percent was with low level self confidence and 2.66 percent with high confidence level.
- xxi) 40 percent of the farmers were having high farming commitment, followed by 32 percent with medium and 28 percent with low level of farming commitment.
- xxii) A great majority of organic farmers (73.3%) were having high farming commitment, 22.7 percent with medium and only 4 percent of the organic farmers were having low level of farming commitment.
- xxiii) Majority of the conventional farmers (52%) were having a low level of farming commitment, 41.33 percent of conventional farmers shown medium farming commitment and 6.67 percent was with high level of farming commitment.
- xxiv) The analysis of personal, socio-economic and psychological characteristics indicated that majority of the farmers of the survey area belonged to middle aged category, medium level of annual income (between Rs. 50,000 to 1,00,000/-) and possessed an area of 1 to 5 acres of land. Majority of the farmers were studied up to high school level with high farming experience and farming commitment. Most of the respondents were having medium level of mass media exposure, closeness with agricultural support system and self confidence. Majority of the farmers had a low level of socio-political participation.
- xxv) The socio economic profile of organic farmers revealed the following: Majority of the organic farmers belonged to middle aged group. A larger section of them had studied up to higher secondary followed by high school, collegiate and primary level. Most of the organic farmers were cultivating an area between 1 to 5 acres, getting an income above

1,00,000/- rupees. A great majority of them possessed high farming experience, mass media exposure and farming commitment. Most of the organic farmers were having medium level of socio- political participation, closeness with agricultural support system and self confidence.

- xxvi) The socio economic profile of conventional farmers revealed that, the majority belonged to old aged group. A great majority of conventional farmers were studied up to high school level followed by primary, higher secondary and collegiate level education. More than half of the conventional farmers were having an area of cultivation below 1 acre, earning less than 50,000 rupees. Most of them were having high farming experience. Majority were having medium level of mass media exposure, closeness with agri. support system and self confidence. Majority of the conventional farmers were falling under low category of socio-political participation and farming commitment.
- xxvii) The profile characteristics except age were found to be significant at one percent level. Hence it can be inferred the organic and conventional farmers in the study area showed a significant difference with regard to the profile characteristics except 'age'.
- xxviii) The organic farmers have higher level of education and are more oriented towards mass media, social interaction, contact with agricultural support system etc. The minimum variation was for 'farming experience' and maximum for 'closeness with agricultural support system'.
- xxix) There existed a significant difference between organic and conventional farmers with regard to profile characteristics such as: education, agricultural land holding, annual income, farming experience, socio-political participation, mass media exposure, closeness with agricultural support system, self confidence and farming commitment.

- xxx) The minimum variation among organic and conventional farmers was for 'farming experience' and maximum for 'closeness with agricultural support system'.

3. Analysis of Integrated Adaptive Capacity Index (IACI)

- i) Majority of the farmers (58%) were found to be moderately adaptable, 24 percent of the farmers were highly adaptable and 18 percent were less adaptable.
- ii) While analysing the adaptive capacity organic farmers, majority (52%) were 'moderately adaptable' and nearly half (48%) were 'highly adaptable'. For the conventional farmers, majority of (64%) were 'moderately adaptable' and 36 percent were less adaptable.
- iii) The comparison of the mean scores of IAC index of organic (81.05) and conventional farmers (46.35) clearly indicated that there exist a significant difference between the two groups and the organic farmers were found to be more adaptive
- iv) There was significant difference between organic and conventional farmers, with respect to the six factors of Integrated Adaptive Capacity Index.
- v) From the results, it could also be seen that the maximum variation between the organic and conventional farmers was with regard to the 'agricultural indicator'. This was attributed to the reason that, the organic farmers are following more climate friendly farming practices whereas than conventional farmers.
- vi) The comparison of the mean scores of the farmers with respect to the bio-physical, agricultural, socio-economic, ecological, technological and managerial factors of IAC index revealed that the organic farmers have better adaptive capacity than conventional farmers
- vii) Among the six factors of IAC index, socio-economic factor was found to be the most contributing one followed by technological,

agricultural, managerial, bio-physical and ecological factors respectively.

- viii) All the six factors: socio-economic, technological, agricultural, managerial, bio-physical and ecological, were found to be positively and significantly correlated with the IAC Index.
- ix) Climate friendly crop production practices included: Crop rotation, Application of organic manures/ bio-fertilizers, Intercropping/ Mixed farming, Mulching, Legume integration, Integrated soil and water conservation measures, Timely Irrigation/ drainage, Soil acidity /pH management- application of soil amendments, Raising and incorporation of green manure leaves/ crops and Summer ploughing.
- x) The climate friendly crop protection practices included: use of bio-control agents like: pseudomonas, trichoderma etc., conservation of natural enemies, use of traps/ repellents, hand/mechanical weeding, use of farmer made preparations from natural ingredients, field sanitation, soil sterilization / solarisation, live fencing/ protection wall, protected cultivation/ rain shelter and cover cropping.
- xi) The Climate friendly crop management practices identified from the study included: changing cropping pattern according to climate change/ variability, diversified land use , selection of healthy planting material , use of climate resilient crops/ varieties, soil testing based nutrient management , integration of live stock component , selection of crops according to market demand, use of alternate means of marketing management of harvest & post harvest handling and processing and value addition.
- xii) There was a positive and significant correlation between the integrated adaptive capacity index and the profile characteristics of the farmers except age.
- xiii) The selected indicators of bio-physical factors included: vulnerability of the location, sustainable water resources, water holding capacity, crop suitability, sustainable soil fertility, crop

production potential, availability of inputs, pest and disease incidents, ownership of farm implements/ machines and fallowing due to climatic stresses.

- xiv) The practices like conservation of biodiversity, conservation of natural vegetation, avoiding the use of chemicals, and farming with minimum pollution, were adopted by more than 70 percent of the farmers from both the groups, with regard to ecological factor.
- xv) The recycling and reuse of resources, sustainable waste management, integration of agro-forestry and effective utilization of solar energy were the practices which needs more attention considering the low rate of adoption (<85 % for organic and < 45 % for conventional farmers).
- xvi) The farmers were facing problems with regard to indicators like: sustainable water resources (organic farmers - 52.33%, conventional - 34%), pest and disease incidents (organic - 56%, conventional – 35.33%), vulnerability of the location (organic - 75.33%, conventional – 36%) and availability of inputs (organic - 80%, conventional – 38.33%).
- xvii) The indicators to the socio-economic factor were: access to basic services, opportunity for lifelong learning and knowledge sharing, institutional/organisational support, diversified sources of income, income generation potential, crop insurance, use of family labour, affiliation to social groups, credit access and asset ownership.
- xviii) Access to basic services, opportunity for lifelong learning, knowledge sharing with fellow farmers, marketing of farm produces were the indicators which are mostly adopted by the farmers (>80% for organic and > 45% for conventional farmers).
- xix) Diversified sources of income, crop insurance, financial improvement through farming and use of family labour were the indicators which needed to be improved as the percentage of adoption was below 50%.

- xx) There existed a significant difference between organic and conventional farmers with regard to the indicators of socio-economic factor.
- xxi) Awareness about climate change, use of water harvesting/recharging structures, adoption of innovative technologies, utilization of trainings, seminars, ICT/internet sources, etc. were the indicators with higher mean score among technological factor.
- xxii) The indicators needed more attention included; farm mechanization utilisation of weather information, keeping a record of agricultural information and preservation of genetic resources.
- xxiii) Planning, marketing strategies, farm supervision and labour management were the indicators with higher mean scores, which are being adopted by most of the farmers, among managerial factor.
- xxiv) The practices having lower adoption included: preparing calendar of operations, timely decision making, crop surveillance and utilization of agri-business opportunities. Attention may be given for improving these areas for making the farmers more adaptable to climate change impacts.

4. Analysis of Agro-ecological profile of farms

- i) The results indicated that the majority (66.67%) of the organic farms were having crop diversity and majority of the conventional farms (53.33%) were having medium level of crop diversity.
- ii) Majority of the organic farmers were having an integrated farming system comprising of field crops, vegetables, fruit cultivation, agro-forestry, dairy, sheep and goat rearing, fishery, poultry, duckery, pigeon, biogas, mushroom, sericulture, bee keeping and by-product utilization of crops which are helping to increase the income and standard of living of the farmers.

- iii) The cropping pattern of the conventional farmers was dominated with mono crop / mixed farming system.
- iv) When 60 per cent of the organic farmers were followed a diversified land use, only 46.66 per cent of the conventional farmers were having the diversification of land.
- v) A great majority (80%) of the organic farmers were having livestock component and majority of the conventional farms (44%) were falling under lower category.
- vi) For production potential and B:C ratio, majority of organic and conventional farms belonged to medium category.
- vii) The results of the pesticide residue level: pesticide residue level was found to be 'nil' which indicated that the use of chemical pesticides was very limited and controlled among the farmers of the survey area.

5. Constraints as perceived by the farmers.

The major constraints as perceived by the farmers were: marketing problems (72.17%), lack of timely weather forecasts and its access to farmers (71.5%), risk due to uncertain weather parameters (69.77), inadequate storage and transportation facilities (64.54%), high cost of inputs (57.85%), inadequate labour availability (55.18%), inadequate input supply agencies/ system(48.93%), non-availability of organic inputs (48.55), inadequate institutional support(43.7%), lack of timely dissemination of appropriate technology for the needy farmers (40.77%), lack of need based training programmes (40.53%), inadequate infrastructural facilities (40.13%) and lack of farmer participatory research (34.24%).

5. Climate change adaptation strategy for sustainable crop production in Kerala.

Based on the study a workable climate change adaptation strategy is proposed at different levels such as: Farmer, Extension delivery system, Research and Government.

- a. The major strategies at farmer level included: adopting locally-relevant climate-smart agricultural practices, changing cropping pattern according to seasonal/ climatic variability/changes, application of organic inputs, insitu-resource utilization etc.
- b. The major strategies at extension delivery system level included: encourage rain water harvesting and recharging measures, making the farmer aware about the bio-physical resources of the farm, support livelihood diversification, promoting crop insurance, etc.
- c. The major strategies at research level included: Identify technologies with mitigation and adaptation synergies, developing climate resilient varieties, development of technologies to improve water productivity and water use efficiency, innovative technologies for value addition of agricultural products, undertaking researches related to climate change and adaptation/mitigation, etc.
- d. The major strategies at government level included: providing additional access to credit and saving mechanisms, establishing efficient transporting and marketing facilities avoiding middle men for getting reasonable income to the farmers, encourage education on how to reduce their emissions, awareness programmes for reducing GHG emission, carbon sequestration etc., disaster risk reduction and climate change in schools and farmer/worker organisations, provide funding for climate adaptation activities and research, etc.

Thus from the study, it is concluded that, organic farming can be considered as one of the climate change adaptation strategies, as it provides a wide variety of benefits, along with additional benefits of biodiversity and environmental services, leading to safe food production and livelihood support.

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6. REFERENCES

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ABSTRACT

**ORGANIC FARMING AS A STRATEGY FOR CLIMATE CHANGE
ADAPTATION – AN EXPLORATORY STUDY**

by

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ABSTRACT

The study entitled “Organic farming as a strategy for climate change adaptation – An exploratory study” was carried out with the objectives to analyze the integrated adaptive capacity of organic farmers in comparison with conventional farmers through the development of a measurement tool, namely, Integrated Adaptive Capacity Index; to create a database of the certified organic farmers of Kerala and to explore the personal, socio-economic and psychological characteristics of the farmers and the agro-ecological characteristics of their farms for formulating a workable climate change adaptation strategy.

The database of certified organic farmers in Kerala was prepared by collecting the information from the list of accredited certifying agencies in Kerala and PGS (Participatory Guarantee System) of India. The respondents were selected from the agro-ecological units having maximum number of certified organic farmers, namely, AEU9 - South central laterites and AEU11- Northern laterites and minimum number of certified organic farmers namely, AEU 1- Southern coastal plain and AEU13- Northern foot hills.

Developing an index for measuring the Integrated Adaptive Capacity (IAC) of the farmers was one of the major achievements of the study. For that, the factors contributing to the Integrative Adaptive Capacity were identified as: socio-economic, technological, agricultural, managerial, bio-physical and ecological. Each factor of the adaptive capacity index was measured by summing up the scores of indicators delineated through pilot study, expert opinion and judges’ relevancy rating. The Integrated Adaptive Capacity (IAC) index was calculated as the composite measure of these six factors.

The comparison of the mean scores of IAC index of organic (81.05) and conventional farmers (46.35) clearly indicated that there exist a significant difference between the two groups and the organic farmers were found to be more adaptive. The IAC index based analysis revealed that majority (62%) of

the organic farmers are of high adaptive capacity where as majority of the conventional farmers (56.1%) belonged to moderate adaptive capacity. The AE Unit wise comparison revealed that the farmers of South central laterites exhibited the highest IAC index, followed by the farmers of Southern coastal plain, Northern foothills and Northern laterites. Among the six IAC factors, socio-economic factor was found to be the most contributing followed by technological, agricultural, managerial, bio-physical and ecological. All these factors were found to be positively and significantly correlated with the IAC Index.

The analysis of personal, socio-economic and psychological characteristics indicated that majority of the farmers of the survey area belonged to middle aged category, medium level of annual income and possessed an area of 1 to 5 acres of land. Majority of the farmers were studied up to high school level with high farming experience and farming commitment. Most of the respondents were having medium level of mass media exposure, closeness with agricultural support system and self confidence. Majority of the farmers were found to have a low level of socio-political participation. The results indicated a positive and significant correlation between the integrated adaptive capacity index and the profile characteristics of the farmers except age.

The major constraints as perceived by the farmers were: marketing problems (72.17%), lack of timely weather forecasts and its access to farmers (71.5%), risk due to uncertain weather parameters (69.77), inadequate storage and transportation facilities (64.54%), high cost of inputs (57.85%), inadequate labour availability (55.18%), inadequate input supply (48.93%), non-availability of organic inputs (48.55), inadequate institutional support (43.7%), lack of timely dissemination of appropriate technology (40.77%), lack of need based training programmes (40.53%), inadequate infrastructural facilities (40.13%) and lack of farmer participatory research (34.24%).

Based on the study a workable climate change adaptation strategy is proposed at different levels such as: Farmer, Extension delivery system, Research and Government. The major strategies at farmer level included: adopting locally-relevant climate-smart agricultural practices, changing cropping pattern according to seasonal/ climatic variability/changes, application of organic inputs, insitu-resource utilization etc. The major strategies at extension delivery system level included: encourage rain water harvesting and recharging measures, making the farmer aware about the bio-physical resources of the farm, support livelihood diversification, promoting crop insurance, etc. The major strategies at research level included: Identify technologies with mitigation and adaptation synergies, developing climate resilient varieties, development of technologies to improve water productivity and water use efficiency, innovative technologies for value addition of agricultural products, undertaking researches related to climate change and adaptation/mitigation, etc. The major strategies at government level included: providing additional access to credit and saving mechanisms, establishing efficient transporting and marketing facilities avoiding middle men for getting reasonable income to the farmers, encourage education on how to reduce their emissions, awareness programmes for reducing GHG emission, carbon sequestration etc., disaster risk reduction and climate change in schools and farmer/worker organisations, provide funding for climate adaptation activities and research, etc.

A comparison of the agro ecological profile of the farmers with highest IAC index indicated that organic farmers had better adaptation capacity for coping up with climate change. Thus from the study, it is concluded that, organic farming can be considered as one of the climate change adaptation strategies, as it optimally combines different practices in a systematic manner using limited resources, along with additional benefits of biodiversity and environmental services, leading to safe food production and sustainable livelihood support.

സംഗ്രഹം

ജൈവകൃഷി സാക്ഷ്യപത്രമുള്ള കൃഷിക്കാരുടെ ഒരു പട്ടിക തയ്യാറാക്കുക, 'സംയോജിത കാലാവസ്ഥാ വ്യതിയാന പൊരുത്തപ്പെടൽ സൂചിക (ഐ.എ.സി. ഇൻഡക്സ്)' എന്ന അളവ് സമ്പ്രദായം ഉപയോഗിച്ചുകൊണ്ട് കാലാവസ്ഥാ വ്യതിയാനവുമായി പൊരുത്തപ്പെട്ട് പോകുവാനുള്ള ജൈവകൃഷിയുടെ കഴിവിനെ രാസകൃഷിയുടേതുമായി താരതമ്യം ചെയ്യുക, കർഷകരുടെ സാമൂഹ്യ-സാമ്പത്തിക-മാനസിക ചുറ്റുപാടുകളെക്കുറിച്ചും അവരുടെ കൃഷിത്തോട്ടത്തിന്റെ കാർഷിക-പാരിസ്ഥിതിക സാഹചര്യങ്ങളെക്കുറിച്ചും വിശകലനം ചെയ്ത് പഠിച്ചതിന്റെ അടിസ്ഥാനത്തിൽ കാലാവസ്ഥാവ്യതിയാനവുമായി പൊരുത്തപ്പെടുവാനുള്ള പ്രായോഗിക ഉപായങ്ങൾ രൂപപ്പെടുത്തുക എന്നിങ്ങനെയുള്ള ഉദ്ദേശ്യങ്ങളോടെ 'കാലാവസ്ഥാ വ്യതിയാനങ്ങളുമായി പൊരുത്തപ്പെട്ട് പോകുവാനുള്ള ഉപായമായി ജൈവകൃഷി - ഒരു അന്വേഷണാത്മക പഠനം' എന്ന പേരിൽ ബിരുദാനന്തര ബിരുദ പഠനത്തിന്റെ ഭാഗമായി ഒരു ഗവേഷണം നടത്തുകയുണ്ടായി.

ഇതിന്റെ ഭാഗമായി ജൈവകൃഷി സാക്ഷ്യപത്രം നൽകുന്നതിനായുള്ള അംഗീകൃത സ്ഥാപനങ്ങളിൽ നിന്നും കേരളത്തിലെ ജൈവകൃഷി സാക്ഷ്യപത്രമുള്ള കൃഷിക്കാരെക്കുറിച്ചുള്ള വിവരങ്ങൾ ശേഖരിച്ചുകൊണ്ട് ഒരു ജൈവകർഷക വിവരപ്പട്ടിക തയ്യാറാക്കുകയുണ്ടായി. കേരളത്തിലെ 23 കാർഷിക-പാരിസ്ഥിതിക യൂണിറ്റുകളിൽ, ജൈവകർഷകർ ഏറ്റവും കൂടുതലും കുറവുമുള്ള യൂണിറ്റുകളായ എ.ഇ.യു: 1 - തെക്കൻ തീരദേശ സമതലം, എ.ഇ.യു: 9 - ദക്ഷിണ-മധ്യ ചെങ്കൽ പ്രദേശം, എ.ഇ.യു: 11 - വടക്കൻ ചെങ്കൽ പ്രദേശം, എ.ഇ.യു: 13 - വടക്കൻ മലയോര മേഖല എന്നിവിടങ്ങളിൽ നിന്നും തെരഞ്ഞെടുത്ത 75 വീതം ജൈവ - രാസ കർഷകർ എന്നിങ്ങനെ, ആകെ 150 കർഷകരിൽ നിന്നുമാണ് വിവര ശേഖരണം നടത്തിയത്.

ഈ ഗവേഷണത്തിന്റെ ഏറ്റവും സുപ്രധാനമായ നേട്ടങ്ങളിലൊന്ന് കാലാവസ്ഥാ വ്യതിയാനവുമായി പൊരുത്തപ്പെടുപോകുന്നത് മനസ്സിലാക്കുന്നതിനുകുന്ന സംയോജിത കാലാവസ്ഥാ വ്യതിയാന പൊരുത്തപ്പെടൽ സൂചിക അഥവാ ഐ.എ.സി. ഇൻഡക്സ് വികസിപ്പിച്ചെടുത്തു എന്നതാണ്. ജൈവ-ഭൗതികം, കാർഷികം, സാമൂഹ്യ-സാമ്പത്തികം, പാരിസ്ഥിതികം, സാങ്കേതികം, ആസൂത്രണം എന്നിങ്ങനെ ആറ് ഘടകങ്ങളാണ് മേൽപ്പറഞ്ഞ സൂചിക രൂപപ്പെടുത്തുവാനായി തെരഞ്ഞെടുത്തത്. ഓരോ ഘടകവും അളക്കുന്നതിനാവശ്യമായ സൂചകങ്ങൾ ഗവേഷകയുടെ നിരീക്ഷണം, അനുബന്ധ ഗവേഷണങ്ങളുടെ വിശകലനം, പ്രാരംഭ പഠനം, ഈ മേഖലയിലെ വിദഗ്ദ്ധരുടെ അഭിപ്രായങ്ങൾ, ഈ വിഷയത്തിൽ നൈപുണ്യമുള്ള വിധികർത്താക്കളുടെ തെരഞ്ഞെടുക്കൽ എന്നീ മാർഗ്ഗങ്ങളിലൂടെ ഉറുത്തിരിച്ചെടുത്ത്, അതാത് സൂചകങ്ങളുടെ മൂല്യങ്ങൾ സംയോജിപ്പിച്ചുകൊണ്ടാണ് 'ഐ.എ.സി. ഇൻഡക്സ്' കണക്കു കൂട്ടിയെടുത്തത്.

ഐ.എ.സി. ഇൻഡക്സിന്റെ ശരാശരി മൂല്യത്തെ അടിസ്ഥാനമാക്കിയുള്ള ഫലങ്ങൾ സൂചിപ്പിക്കുന്നത് കാലാവസ്ഥാ വ്യതിയാനത്തെ പ്രതിരോധിക്കുന്ന കാര്യത്തിൽ ജൈവകൃഷിക്കാരും (81.05) രാസകൃഷിക്കാരും (46.35) തമ്മിൽ പ്രകടമായ അന്തരം നിലനിൽക്കുന്നു എന്നാണ്. ഭൂരിഭാഗം ജൈവ കർഷകർ (62%) കാലാവസ്ഥാ വ്യതിയാനവുമായി പൊരുത്തപ്പെടുപോകുവാൻ ഉയർന്ന തോതിലുള്ള കഴിവ് പ്രകടിപ്പിച്ചപ്പോൾ, ഭൂരിഭാഗം രാസകർഷകർ (56.1%) മധ്യമ നിലവാരമാണ് പുലർത്തിയത്. ഐ.എ.സി. ഇൻഡക്സിന്റെ ആറ് ഘടകങ്ങളിൽ, ഏറ്റവും കൂടുതൽ സ്വാധീനം ചെലുത്തിയത് സാമൂഹ്യ-സാമ്പത്തിക ഘടകമാണെന്നാണ് കാണാൻ കഴിഞ്ഞത്. രണ്ടാമതായി സാങ്കേതികം, അതിനു പിന്നാലെ കാർഷികം, പിന്നീട് യഥാക്രമം

ആസൂത്രണം, ജൈവ-ഭൗതികം, പാരിസ്ഥിതികം എന്നിങ്ങനെയുള്ള ഘടകങ്ങളാണെന്നും കണ്ടെത്താൻ കഴിഞ്ഞു.

പഠനത്തിനായി തിരഞ്ഞെടുത്ത നാല് കാർഷിക-പാരിസ്ഥിതിക യൂണിറ്റുകളിലെ കർഷകരുടെ ശരാശരി ഐ.എ.സി. ഇൻഡക്സ് പ്രകാരം, എ.ഇ.യു: 9 - ദക്ഷിണ-മധ്യ ചെങ്കൽ പ്രദേശത്തെ കർഷകർ ഏറ്റവും ഉയർന്ന സൂചിക നേടിയപ്പോൾ, എ.ഇ.യു: 1 - തെക്കൻ തീരദേശ സമതലം , എ.ഇ.യു: 13 - വടക്കൻ മലയോര മേഖല, എ.ഇ.യു: 11- വടക്കൻ ചെങ്കൽ പ്രദേശം എന്നീ കാർഷിക-പാരിസ്ഥിതിക യൂണിറ്റുകളിലെ കർഷകർ യഥാക്രമം തൊട്ടു പിന്നാലെയുള്ള സൂചികകൾ നേടുകയുണ്ടായി.

കർഷകരുടെ സാമൂഹ്യ-സാമ്പത്തിക-മാനസിക ചുറ്റുപാടുകളെക്കുറിച്ച് നടത്തിയ പഠനത്തിൽ നിന്നും മനസ്സിലാക്കാൻ കഴിഞ്ഞ കാര്യങ്ങൾ താഴെ പറയുന്ന- കൂടുതൽ കർഷകരും മധ്യവയസ്കരും ഹയർസെക്കൻററി തലം വരെ വിദ്യാഭ്യാസമുള്ളവരും ഒരേക്കറിനും അഞ്ചേക്കറിനും ഇടയിൽ വരുമാനം ഉള്ളവരും ഒരു ലക്ഷത്തിന് മുകളിൽ വാർഷിക വരുമാനമുള്ളവരും, 10 വർഷത്തിലേറെ കൃഷി പരിചയം ഉള്ളവരും ഉയർന്ന കാർഷിക പ്രതിബദ്ധത ഉള്ളവരുമായിരുന്നു. കാർഷിക മേഖലയുമായി ബന്ധപ്പെട്ട് ബഹുജന മാധ്യമങ്ങൾ, കൃഷി അനുബന്ധമേഖലകൾ എന്നിവ ഏറ്റെടുക്കുന്ന ഉപയോഗിക്കുന്നവരും, ശരാശരി ആത്മവിശ്വാസം ഉള്ളവരുമായിരുന്നു എങ്കിലും മിക്ക കർഷകർക്കും സാമൂഹ്യ-രാഷ്ട്രീയ പങ്കാളിത്തം തീരെ കുറവായിരുന്നു. കാലാവസ്ഥാ വ്യതിയാനവുമായി പൊരുത്തപ്പെട്ട് പോകുവാനുള്ള കഴിവും വയസ്സ് ഒഴികെയുള്ള കർഷകരുടെ സാമൂഹ്യ-സാമ്പത്തിക-മാനസിക ചുറ്റുപാടുകളും തമ്മിൽ അനുകൂലവും പ്രധാനവുമായ ബന്ധമുണ്ടായിരുന്നതായും കണ്ടെത്താൻ കഴിഞ്ഞു.

കാർഷിക ഉൽപ്പന്നങ്ങളുടെ വിപണനവുമായി ബന്ധപ്പെട്ട പ്രശ്നങ്ങൾ, കാലാവസ്ഥാ പ്രവചനങ്ങളെക്കുറിച്ചും അതോടനുബന്ധിച്ചെടുക്കേണ്ട മുൻകരുതലുകളെക്കുറിച്ചുമുള്ള കൃത്യമായ അറിയിപ്പുകൾ തക്കസമയത്ത് എല്ലാ കർഷകർക്കും ലഭിക്കാത്തത്, കാർഷിക ഉല്പന്നങ്ങളുടെ സംഭരണവും വിപണനസ്ഥലം വരെ കൊണ്ടുപോകുന്നതിനാവശ്യമായ ഗതാഗതസൗകര്യങ്ങളുടെയും അപര്യാപ്തത, കാർഷികോപാധികളുടെ വർദ്ധിച്ച വില, കർഷകത്തൊഴിലാളികളുടെ ക്ഷാമം, ജൈവ ഉപാധികളുടെ ലഭ്യതക്കുറവ്, കാർഷികാനുബന്ധ സ്ഥാപനങ്ങളുടെ സഹായക്കുറവ് (സാമ്പത്തികം സഹായം, ഫീൽഡ് സ്റ്റാഫുകളുടെ സേവനം, സാങ്കേതിക നിർദ്ദേശങ്ങൾ എന്നിങ്ങനെ), സന്ദർഭോചിതമായ സാങ്കേതിക വിദ്യകൾ കർഷകർക്ക് ലഭ്യമാകാത്തത്, കർഷകരുടെ ആവശ്യാനുസരണം പരിശീലനങ്ങൾ ലഭിക്കാതിരിക്കുന്നത്, അടിസ്ഥാന സൗകര്യങ്ങളുടെ അപര്യാപ്തത, കർഷക പങ്കാളിത്ത ഗവേഷണങ്ങളുടെ കുറവ് എന്നിവയായിരുന്നു കർഷകർ നേരിടുന്ന പ്രധാന പ്രശ്നങ്ങളായി കണ്ടെത്തിയത്.

മേല്പറഞ്ഞ കണ്ടെത്തലുകളുടെ അടിസ്ഥാനത്തിൽ, കാലാവസ്ഥാവ്യതിയാനവുമായി പൊരുത്തപ്പെടുവാനായി ഉരുത്തിരിച്ചെടുത്ത പ്രായോഗിക ഉപായങ്ങൾ- കർഷകർ, വിജ്ഞാന വ്യാപന മേഖല, ഗവേഷണം, ഗവൺമെന്റ്- എന്നീ നാല് തലങ്ങളിലായി രൂപീകരിക്കുകയുണ്ടായി. തദ്ദേശീയമായ കാലാവസ്ഥാപ്രതിരോധക്ഷമതയുള്ള കാർഷിക പ്രവർത്തനങ്ങൾ, കാലാവസ്ഥാമാറ്റത്തിന് അനുസരിച്ച് വിളപരിക്രമത്തിൽ മാറ്റം വരുത്തൽ, ജൈവ-ഉപാധികളുടെ ഉപയോഗം, കൃഷിയിടത്തിൽനിന്നുതന്നെയുള്ള വിഭവസമാഹരണം - എന്നിങ്ങനെ കർഷകതലത്തിലും; കാലാവസ്ഥാ പ്രവചനങ്ങളും അതോടനുബന്ധിച്ചെടുക്കേണ്ട മുൻകരുതലുകളെക്കുറിച്ചുമുള്ള അവശ്യമായ അറിയിപ്പുകൾ കൃത്യസമയത്ത് എല്ലാ കർഷകർക്കും നൽകുന്നതിനാവശ്യമായ നടപടികൾ സ്വീകരിക്കുക, മഴവെള്ള സംഭരണം-പുന:രൂപയോഗം-പുന:ചംക്രമണം എന്നിവ പ്രോത്സാഹിപ്പിക്കുക,

കർഷകർക്ക് അവരുടെ കൃഷിഭൂമിയുടെ ജൈവ-ഭൗതിക ഉപാധികളെക്കുറിച്ച് ബോധവൽക്കരണം നൽകുന്നതിനാവശ്യമായ നടപടികൾ സ്വീകരിക്കുക, ഉപജീവനമാർഗ്ഗങ്ങളുടെ വൈവിധ്യവൽക്കരണത്തിനുകുന്ന പദ്ധതികൾ വ്യാപിപ്പിക്കുക, കാർഷിക വിള ഇൻഷുറൻസ് പദ്ധതികൾ വിപുലീകരിക്കുക - എന്നിങ്ങനെ വിജ്ഞാന വ്യാപന മേഖലാ തലത്തിലും; കാലാവസ്ഥാവ്യതിയാനത്തെ ലഘൂകരിക്കുന്നതിനും ഇണങ്ങിച്ചേരുന്നതിനും പര്യാപ്തമായ സാങ്കേതിക വിദ്യകൾ രൂപീകരിക്കുക, കാലാവസ്ഥാവ്യതിയാനപ്രതിരോധശേഷിയുള്ള വിളയിനങ്ങൾ വികസിപ്പിച്ചെടുക്കുക, ജല-വിഭവ വിനിയോഗക്ഷമത വർദ്ധിപ്പിക്കുന്നതിനാവശ്യമായ നൂതന സാങ്കേതിക വിദ്യകൾ വികസിപ്പിച്ചെടുക്കുക, വൈവിധ്യങ്ങളായ കാർഷിക-മൂല്യവർദ്ധിത ഉൽപ്പന്നങ്ങൾ ഉരുത്തിരിയ്ക്കുക, കാർഷിക മേഖലയിലെ കാലാവസ്ഥാവ്യതിയാന ലഘൂകരണ/പ്രതിരോധവുമായി ബന്ധപ്പെട്ട ഗവേഷണ പദ്ധതികൾ ഏറ്റെടുക്കുക - എന്നിങ്ങനെ ഗവേഷണ തലത്തിലും; കാർഷിക രംഗത്ത് സാമ്പത്തിക സംരക്ഷണം വർദ്ധിപ്പിക്കുക, കർഷകരെ ചൂഷണം ചെയ്യുന്ന ഇടനിലക്കാരെ ഒഴിവാക്കുവാൻ വേണ്ടിയുള്ള നടപടികൾ സ്വീകരിക്കുക, കൃഷി വകുപ്പിൽ കൂടുതൽ ഫീൽഡ് ജീവനക്കാരെ നിയമിക്കുന്നതിനുള്ള നയരൂപീകരണം നടത്തുക, കർഷകർക്ക് അവരുടെ കാർഷികോല്പന്നങ്ങൾ നേരിട്ട് വിറ്റഴിക്കുന്നതിനുവേണ്ടി ഗതാഗത-വിപണി സൗകര്യങ്ങൾ വർദ്ധിപ്പിക്കുക, ഹരിത ഗൃഹ വാതകങ്ങളുടെ നിർഗ്ഗമനം കുറയ്ക്കുക, കാർബൺ സംഭരണം, എന്നിങ്ങനെയുള്ള വിഷയങ്ങളിൽ വിദ്യാഭ്യാസ-ബോധവൽക്കരണ പരിപാടികൾ ആസൂത്രണം ചെയ്യുക, കാലാവസ്ഥാ ദുരന്തനിവാരണ സന്നാഹ ബോധവൽക്കരണം സ്കൂൾ- കർഷക സമൂഹങ്ങൾ- സ്ഥാപനങ്ങൾ എന്നിങ്ങനെ വിവിധ തലങ്ങളിലുള്ള പ്രവർത്തനങ്ങളിലൂടെ കാര്യക്ഷമമാക്കുക, കാലാവസ്ഥാവ്യതിയാന പ്രതിരോധത്തിലൂന്നിയുള്ള ഗവേഷണപദ്ധതികൾക്കാവശ്യമായ ഫണ്ട് അനുവദിക്കുക - എന്നിങ്ങനെ ഗവൺമെന്റ് തലത്തിലുമുള്ള പ്രായോഗിക ഉപായങ്ങളാണ് ഈ ഗവേഷണത്തിലൂടെ നിർദ്ദേശിച്ചിട്ടുള്ളത്.

ഏറ്റവും ഉയർന്ന ഐ.എ.സി. സൂചകം ലഭിച്ച കൃഷിക്കാരുടെ തോട്ടത്തിൻറെ കാർഷിക-പാരിസ്ഥിതിക സാഹചര്യങ്ങളെക്കുറിച്ച് വിശകലനം ചെയ്തിൻറെ അടിസ്ഥാനത്തിൽ, കാലാവസ്ഥാവ്യതിയാനവുമായി ഇണങ്ങിച്ചേരുന്നതിനായി രാസകൃഷിക്കാരെ അപേക്ഷിച്ച് ജൈവകൃഷിക്കാർക്കാണ് കൂടുതൽ കഴിയുന്നത് എന്ന് മനസ്സിലാക്കാൻ കഴിഞ്ഞു. അതുകൊണ്ട് തന്നെ, സുരക്ഷിത ഭക്ഷണം, സുസ്ഥിര ഉപജീവനമാർഗ്ഗം, ജൈവ വൈവിധ്യ- പാരിസ്ഥിതിക സംരക്ഷണം ഉൾപ്പെടെ നിരവധി പ്രയോജനങ്ങൾ നൽകുന്നതോടൊപ്പം കാലാവസ്ഥാവ്യതിയാനവുമായി പൊരുത്തപ്പെട്ട് പോകുന്നതിനുള്ള ഉപായങ്ങളിലൊന്നായും ജൈവകൃഷി സഹായകമാകുന്നു എന്ന് ഉറപ്പാക്കാം.

APPENDICES

APPENDIX-I

INVENTORY OF THE CERTIFIED ORGANIC FARMERS OF KERALA

1. List of organic farmers certified by INDOCERT according to NPOP/USDA/NOP

Sl. No	Name	Address	Crops	AEU No.
1	Abraham Varkey	Elavukaduppil H, Nettithozhu P.O, Idukki, Kerala Cont: 04868-285209	Pepper, Coffee, Cardamom , Tapioca, Turmeric, Banana, Ginger	16
2	Bhaskaran Nambiar T.V	Brusi House Valakkai, Koyyam P.O, Kannur, Kerala 04602260353,0498-2260353	Coconut , Arecanut , Plaintain, Pepper	11
3	Boban Thomas	Pallivathukal H, (Kunnathettu) Ramapuram Bazar P.O Kottayam, Kerala 0482260568,9245519542, paradiseimportexports@yahoo.co.in	Gooseberry, Mango	9
4	Bovas G	Pandimamvilaveedu, Kokuzhikunnu, Wayanad, Kerala 9747134111	Pepper , Coffee, Arecanut, Nutmeg, Coconut , Pepper, Banana, Ginger , Turmeric, Cardamom, Chilly bird eye, cloves	21
5	C.J.Mathew	Panamkayam Estate Uppada P.O., Nilambur Malappuram, Kerala 679354 493275297	Arecanut, Banana, Pepper, Cocoa, Nutmeg,	13
6	Chackochan P.J	Pullanthanikal(h) Mullankolly P.O, Wayanad, Kerala Res. 04936-240303,209977,mob.9447341099 /vanamoolika@yahoo.com	Coffee, Pepper , Vanilla, Cardamom, Arecanut , Coconut, Banana , Ginger, Turmeric , Vegetables, Medicinal plants, Fruits	21
7	Dinesh Kumar	Peravallil Pullanadi, Alappuzha, Kerala 0477 2736265	Paddy, Coconut, Banana,	1

8	Gangadharan V.S	Vattaparambil H Pathzhkad, Thrissur, Kerala 0480 2850375, 9446233406	Arecanut, Bitter Gourd, Tomato, Coconut, black pepper, cowpea vegetables, cucumber, curry leaf, Drum stick, garcinia camboliga, garcinia gamboliga dried, ginger fresh, green chilly fresh, green pepper/bell pepper, jack fruit, little /Ivy Gourd, mango, nutmug, nutmug mace, Okra, Papaya, pumkins	15
9	James Thomas	Ottakkattil (h), Chelad P.O. Kothamangalam Ernakulam, Kerala 0485-2823262, 09539072580/ tom.ottakkattil@indiaind.com, tom_james2006@rediffmail.com	Arecanut, Coffee, Cocoa, Coconut, Nutmeg, Garcinia, Guavas, Jackfruit, Jamba, Mango, Mangostein, Papaya, Plantain, Rambutan	14
10	Joseph K.A	Kizhakkethottam Nettithozhu P.O, Idukki, Kerala 04868-285207,09605047776	Clove, Pepper, Coffee, Cardamom, Vanilla, Gosseberry, Turmeric, Tomato, Jackfruit, Banana	16
11	Joseph Korah	Karivelithara Mampizhakary, Alappuzha, Kerala 0477 2707375, 9495240886, rice@poabs.in	Paddy	1
12	Joseph M.D	Madappally House, Nettithozhu P.O Kochera, Idukki, Kerala, 04868-285031	Coffee, Banana, Pepper, Ginger, Turmeric	16
13	Kaladharan A.J	Paliyamangalam Kalam, Palakkad, Kerala 9446726049, 9446827674, poabs_organic@yahoo.com	Coconut, Paddy	13
14	Kamalasanan Pillai.P.	Krishna Mandiram, Kalluvathukkal P.O., Kollam, Kerala 9387212005, 04742573600, kamalasanan.pillai@rediffmail.com	Banana, Red Rice Paddy, Amaranthus spinosus, Cowpea, Cucumber, Okra	9
15	Kuriakose P.M	Peedikeparampil Nettithozhu P.O, Idukki, Kerala 9495495308	Turmeric fresh, Banana fresh, Black pepper, Cardamom, Clove, Cocoa, Coffee cherry - Arabica, Vanilla, White pepper	16
16	Mathew Mathew	Kizhakkekkara(h), Kanjirapuzha P.O, Palakkad, Kerala, 04924-238232, 238142, 9447973232, mmathew@vsnl.com	Coconut, Arecanut, Cocoa, Banana, Pepper, Mango	13

17	Medona Kadamala	Kadamala House, Kavilipad, Pin 678017 Palakkad, Kerala (678017) 9447965601, kadamalaphilip@gmail.com	Arecanut, Banana, Coconut, Mango, Nutmeg, Paddy-Navara, Red Rice Paddy, Tapioca	22
18	Mohamed CM	Vettom, Tirur, Malappuram, Kerala Pin- 676102 0494-2630019, 9447626356 cmohamed@hotmail.com	Arecanut, Banana, Coconut, Colocasia, Pepper, Elephant Yam, Nutmeg, Papaya	2
19	Narayanan Unny P	Karukamani Kalam, Palakkad, Kerala 04923-221177, 9447277749, unnysfarm@gmail.com, unny@navara.in,	Paddy, Coconut, Banana, Mango, Pomegranate, Papaya, Tamarind , Aromatic & Medicinal Plants	22
20	Narendranath C	Mevarathu House, Perumkulam.P.O, Kottarakara, Kollam, Kerala Ph:0477-2662442,9847774725,	Turmeric, Amaranthus, Arecanut, Ash Gourd, Banana, Beet root, Bitter Gourd, Bottle Gourd, Brinjal, Cabbage, Carrot, Cauliflower, Coconut, Colocasia. Cowpea	9
21	Regi Joseph	Palackatharappil House, Valambilimagal (PO), Shreekrishnapuram , Palakkad, Kerala 0466-2261264	Coconut , Banana , Amla , Pepper , Arecanut	10
22	Sivankutty T.C	Thundiyl H. Edathwa, Changamkari P.O, Alappuzha, Kerala 0477 2212689, 9349469110	Coconut, Paddy , Mango, Banana	4
23	Thomas K.J	Karipaparambil (h) Irumbakachola P.O , Palakkad, Kerala 04924-222446,222321, kjt321@gmail.com	Coconut, Pepper, Plaintain , Vanilla, Mango	15
24	Thomas K.T	Kizhakekara House , Palakkad, Kerala 04924-238435, 238571,222506, 225377, mail.ktthomas@gmail.com	Coconut, Cocoa, Vanilla , Arecanut, Pepper, Mango, Jackfruit, Coffee, Betel Nuts, Banana, Vanilla	22
25	Thomas Mathew	Kizhakekkara House, Kanjirapuzha P.O Mannarkkad , Palakkad, Kerala 04924-238997, 238262, 9447622478 tomyorganicfarmer@gmail.com	Plaintain, Coconut, Mango, Amla, Guava, Sapota, Plaintain, Pepper, Ginger, Turmeric, Jackfruit, Bilimbi, Vanilla, Sapota	13

2. List of organic farmers under Hops, Adimali, certified by INDCERT according to NPOP/USDA/NOP

SI No	Name of Farmers	Address	Area (ha)	Crops Grown	AEU No.
1	K R Sasidharan	Kanjiramkalayil, Vellathooval P.O	0.805	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
2	C J Davis	Chalackal, Muthuvankudi	0.3	Pepper, Coffee, Cocoa, Coconut, Arecanut	16
3	Viswanathan Nair	Pallippurathu, Senkulam, Muthuvankudi	0.607	Pepper, Cocoa, Nutmeg, Clove, Cardamom	16
4	Sasidharan P P	Payathikalayil, Senkulam, Muthuvankudi	0.809	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	16
5	K C Paulose	Kuzhiualil, Senkulam, Muthuvankudi	0.587	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	16
6	George John	Perumathethu, Senkulam, Muthuvankudi	1.62	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	16
7	Thankachan M S	Marottickal Thadathil, Vellathooval	1	Pepper, Coffee, Cocoa, Coconut	14
8	Shaji Kurian	Myladiil, Elkunnu, Vellathooval P.O	2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Ginger	14
9	M T Thomas	Myladiil, Elkunnu, Vellathooval P.O	2.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
10	C P Varghese	Chittinapilli, Senkulam, Muthuvankudi	1.3	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	16
11	P K Damodaran	Palamattathuputhenpurayil, Elkunnu, Vellathooval P.O	0.303	Pepper, Coffee, Cocoa, Nutmeg, Cardamom	14
12	K P Roy	Karakunnel, Senkulam, Muthuvankudi	1.42	Pepper, Coffee, Cocoa	16
13	P T Sudevan	Palathumthalackal, Senkulam, Muthuvankudi	1.62	Pepper, Coffee, Cocoa, Coconut	16
14	Prasanna Venugopal	Magattu, Senkulam, Muthuvankudi	0.4	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	16

15	Thankamma Appukkuttan	Padinjarepanayatti, Senkulam, Muthuvankudi	1.2	Pepper, Coffee, Cocoa, Coconut, Arecanut	16
16	P R Suresh	Punnanikkattu, Senkulam P.O, Muthuvankudi	0.809	Cardamom, Arecanut, Tamarind	16
17	Prasad P K	Palathumthalackal, Senkulam, Muthuvankudi	1.52	Tamarind, Allspice	16
18	Lakshmi Damodharan	Kanakkuzhiyil, Vellathooval P.O	0.696	Pepper, Coffee, Cocoa, Nutmeg, Clove Cardamom, Tamarind	14
19	Alice Paul	Green Garden, Vellathooval	3.32	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Tamarind	14
20	Vinod Joseph	Thuruthiyil, Kuthupara, Vellathooval	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Vanilla, Arecanut	14
21	Baby k M	Kannattu, Kuthupara, Vellathooval	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut	14
22	Saji Joseph	Plathottam, Vellathooval	1.2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Arecanut	14
23	P S Francis	Plathottam, Vellathooval	2.4	Pepper, Coffee, Cocoa, Nutmeg, Banana	14
24	Thomas P B	Panakuzhimaliyil, Kuthupara, Vellathooval	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut , Banana	14
25	M T Joseph	Mailadiyil, Kuthupara, Vellathooval	1.4	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut, Ginger, Banana	14
26	Devasia Luka	Plathottam, Vellathooval	2.06	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Banana	14
27	K M Johnson	Kallarackal, Kuthupara, Vellathooval	0.88	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut	14
28	C R Vijayan	Chonamkattil, Vellathooval	0.8	Pepper, Cocoa, Nutmeg	14
29	T R Xavier	Thekkedathu, Vellathooval	0.6	Pepper, Cocoa	14
30	Thomas Paul	Thannikottu, Kuthupara, Vellathooval	1.2	Pepper, Coffee, Cocoa, Nutmeg, Tamarind	14
31	Joseph Mathew	Mannarathu, Senkulam	3.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14

32	Saju Varghese	Chittinapilly, Vellathooval, Kuthupara	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut	14
33	John Joseph	Muttathukudiyil, Vellathooval, Kuthupara	0.6	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Banana	14
34	P C Varkey	Paravarakathu, Vellathooval, Kuthupara	0.81	Coffee, Cocoa, Nutmeg, Coconut, Cardamom Arecanut, Banana	14
35	George M J	Mollathukudiyil, Vellathooval, Kuthupara	1.01	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
36	Paulose P O	Parankimalil, Vellathooval, Kuthupara	0.405	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
37	Benny Augustine	Nattumilathu, Vellathooval, Kuthupara	1.61	Pepper, Coffee, Cocoa, Nutmeg	14
38	D Mohananpillai	Vellapillil, Vellathooval, Kuthupara	1.06	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
39	Kunjagasthi	Eettikanathil, Vellathooval	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
40	T J Baby	Theruvamkunnel, Vellathooval, Kuthupara	1.5	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut Cardamom, Ginger, Turmeric, Banana	14
41	Shinto Joseph	Cittinapilly, Vellathooval, Kuthupara	0.931	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Banana	14
42	Pappachan P K	Parayarukuzhiyil, Vellathooval, Kuthupara	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut, Ginger, Banana	14
43	Thomas Varghese	Cittinapilly, Vellathooval, Kuthupara	0.405	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
44	K V Chandran	Kottor, Vellathooval, Kuthupara	0.405	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Tamarind	14
45	Varkey Paily	Kannachammackal, Vellathooval, Kuthupara	0.38	Pepper, Coffee, Cocoa, Coconut, Cardamom	14
46	Jose K L	Kurisungal, Vellathooval, Kuthupara	0.40	Pepper, Coffee, Cocoa, Nutmeg, Cardamom	14
47	N.M.Kurian	Nadackal (H), Ellackal	3.6	Pepper, Cocoa, Nutmeg, Coconut	14
48	N M George	Nadackal, Ellackal	2.2	Pepper	14
49	Bosco Michael	Puthenpurayil, Ellackal	4	Nutmeg, Cardamom, Tamarind, Banana	14
50	Joseph P M	Pendanathu, Ellackal	3.2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut, Banana	14
51	Jince Thomas	Mattel, Ellackal	1.4	Pepper, Coffee, Cocoa, Nutmeg, Cardamom	14

52	Mathew Manuel	Cheeramkuzhiyil, Ellackal	1.06	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
53	Saji Jacob	Mattel, Ellackal	1.92	Pepper, Coffee, cocoa	14
54	Mathew J	Kuzhinjalil, Ellackal	2	Pepper, Coffee, cocoa, Nutmeg	14
55	Antony Joseph	Olickal, Ellackal	2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
56	Joy Joseph	Kallarackal, Pothupara, Vellathooval	2.66	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
57	P V Sukumaran	Parooparambil, Ellackal	0.28	Pepper, Cocoa, Coconut, Cardamom, Tamarind	14
58	Baby Jacob	Mattel, Pothupara, Ellackal	2.42	Pepper, Coffee, Nutmeg, Coconut	14
59	A J Jose	Anjilikudiyil, Ellackal	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut, Turmeric, Banana	14
60	Augustine Jose	Mattel, Ellackal P.O, Pothupara	1.62	Pepper, Cocoa	14
61	O N Sarada	Thakidiyil, Ellackal P.O	0.6	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Vanilla, Arecanut	14
62	Babu V K	Vettukallel, Pothupara, Ellackal	1.42	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Arecanut	14
63	Manoj V K	Vettukallel, Pothupara, Ellackal	1.21	Coffee, Cocoa, Nutmeg	14
64	Joseph Joseph	Olickal, Ellackal P.O	1.21	Pepper, Coffee, Cocoa, Coconut	14
65	Joshy Mathew	Thoomkuzhiyil, Ellackal P.O, Pothupara	0.4	Pepper, Coffee, Cocoa, Coconut, Banana	14
66	Jaison Joseph	Mattel, Ellackal P.O, Pothupara	1.6	Pepper, Cocoa, Clove, Coconut, Nutmeg	14
67	Wilson C K	Chunayamackal, Ellackal P.O, Pothupara	0.29	Pepper, Coffee, Cocoa, Nutmeg	14
68	Santhosh Xavier	Valuparayil, Ellackal P.O, Pothupara	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove Coconut, Cardamom, Arecanut, Banana	14
69	Sabu Mathews	Thoomkuzhiyil, Ellackal P.O, Pothupara	0.6	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Arecanut	14
70	Jolly Mathew	Thoomkuzhiyil, Ellackal P.O, Pothupara	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
71	Aji Kurian	Nadackal, Ellackal P.O	0.809	Pepper	14
72	Emmanuel C	Cheeramkuzhiyil, Ellackal P.O, Pothupara	1.42	Pepper, Cocoa, Coconut	14

73	K C Saji	Kunnampuratu, Ellackal P.O, Pothupara	0.5	Pepper, Cocoa, Coconut, Nutmeg, Cardamom	14
74	Anandan P S	Palathumthalackal, Ellackal P.O, Pothupara	2.02	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Banana	14
75	Issac	Vadakara, Pazhampillichal	0.80	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
76	Joseph Paily	Valayiriyil, Pazhampillichal	0.405	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
77	Chacko M Lukose	Mavalathukuzhi, Pazhampillichal	1	Pepper, Cocoa, Nutmeg, Clove, Coconut	14
78	Sibu	Kollammolayil, Pazhampillichal	1	Pepper, Cocoa, Nutmeg, Coconut	14
79	K V Kunjarakan	Kallumalai, Pazhampillichal	1	Pepper, Coffee, Cocoa, Coconut	14
80	Francis Sebastian	Ombillil, Pazhampillichal	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
81	V I Mani	Vattathara, Pazhampillichal	1.5	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
82	Raju Varghese	Kochuparambil, Padicapu P.O, Pazhampillichal	0.40	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
83	P.O Sunny	Pazhayidath, Padicapu P.O, Pazhampillichal	0.4	Pepper, Cocoa, Nutmeg, Coconut	14
84	K T Raju	Kalarickal, Padicapu P.O, Pazhampillichal	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
85	Antony Aavira	Maniyagattu, Padicapu P.O, Pazhampillichal	0.60	Pepper, Cocoa, Nutmeg, Coconut	14
86	T P Vakkachan	Thachiyathu, Padicapu P.O, Pazhampillichal	0.60	Pepper, Cocoa, Nutmeg, Coconut	14
87	K V Mohanan	Kaniyamkudiyil, Padicapu P.O, Pazhampillichal	0.20	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
88	Antony Auseph	Pallithazhath, Padicapu P.O, Pazhampillichal	0.80	Pepper, Cocoa, Coconut, Arecanut	14
89	Salamma Thankachan	Parayil, Padicapu P.O, Pazhampillichal	0.40	Pepper, Coffee, Cocoa	14
90	C M Joy	Chirackal, Padicapu P.O, Pazhampillichal	0.93	Pepper, Coffee, Cocoa, Coconut	14

91	Subhash P X	Panakunnei, Padicapu P.O, Pazhampillichal	0.8	Pepper, Cocoa	14
92	Chacko Devasia	Ellickal, Padicapu P.O, Pazhampillichal	0.80	Pepper, Coffee, Cocoa, Coconut	14
93	Chandi P Alexander	Vazhakunnathu, Irumbupalam, Valara P.O	1.01	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
94	P M Latheef	Parekattil, Irumbupalam, Valara P.O	1.02	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
95	E J Joseph	Elleekal, Irumbupalam, Valara P.O	1.01	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
96	Mohanan	Putholickal, Irumbupalam, Valara P.O	1.21	Pepper, Cocoa, Nutmeg, Coconut	14
97	K V Mathappan	Kadalikandom, Irumbupalam, Valara P.O	1	Pepper, Coffee, Cocoa, Nutmeg	14
98	Vijayan	Pullolickal, Irumbupalam	0.566	Pepper, Cocoa, Nutmeg, Coconut	14
99	M P Paulose	Molel, 14th mile, Valara P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
100	M K Shaji	Molel, Irumbupalam, Valara P.O	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
101	Abdulkhader M .S	Mekkothuputhempurackal, Irumbupalam, Valara P.O	0.405	Pepper Coffee, Cocoa, Nutmeg, Areca nut	14
102	M P Aliyar	Moolethottiyil, Irumbupalam, Valara P.O	0.809	Pepper, Cocoa	14
103	K V Yacob	Kottickal, Valara P.O	0.61	Pepper, Cocoa, Nutmeg, Coconut	14
104	K V Eldhose	Kanattukudi, Irumbupalam, Valara P.O	1.21	Pepper, Cocoa, Nutmeg, Coconut	14
105	C P Hassan	Chirapulyil, Irumbupalam, Valara P.O	1	Pepper, Cocoa	14
106	Babu K J	Konnackal, Valara P.O	1.42	Pepper, Coffee, cocoa, Nutmeg, Coconut	14
107	Joy K P	Kunnappillil, Irumbupalam, Valara P.O	1	Pepper, Coffee, cocoa, Nutmeg, Clove, Coconut	14
108	Baby K V	Korupadathil, Padikappu P.O	2.02	Pepper, cocoa, Nutmeg, Clove, Coconut	14
109	Sreebu P P	Piramadathottathil, Padikappu P.O	1	Pepper, cocoa, Nutmeg, Coconut	14
110	Mathai	Pallichankudiyil, Padikappu P.O	1	Pepper, Nutmeg, Coconut	14
111	Shibu	Piramadathottathil, Padikappu P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg	14
112	Baby	Pulparambil, Padikappu P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
113	P P Sabu	Pengasseri, Padikappu P.O	1	Pepper, Coffee, Cocoa, Coconut	14
114	T M Khadar	Thattayathil, Padikappu P.O	0.61	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Areca nut	14
115	K G Babu	Kochukandathil, Padikappu P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Areca nut	14
116	Sibi Abraham	Paradiyil, Iruuttukanam	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14

117	Santhosh K V	Kolasseril, Anaviratty	1.2	Pepper, Cocoa, Coconut	14
118	Abraham Philip	Paradiyil, Anaviratty	1.2	Pepper, Coffee, Coconut	14
119	Sunny Mathew	Kadukumplayil, Irukkanam	4	Pepper, Coffee, Nutmeg, Coconut, Cardamom, Vanilla, Areca nut, Tamarind	14
120	George P D	Pokkattu, Thokkupara P.O	2	Pepper, Coffee, Cocoa, Coconut	14
121	Sabu P.S	Pacholil, Thokkupara P.O	1.21	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
122	Raju P.S	Pacholil, Thokkupara P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
123	Babu Varghese	Ammakuzhiyil, Thokkupara P.O	0.10	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
124	Abdul Kareem	Kolath, Thokkupara P.O	0.805	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Banana	14
125	Gopi C K	Chellackalpara, Thokkupara P.O	0.80	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Areca nut, Banana	14
126	K I Philip	Kadalickal, Thokkupara P.O	1.21	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
127	Fr. Mathew George	Kattiparambil, Thokkupara P.O	0.53	Pepper, Coffee, Cocoa	14
128	Johny K P	Koomullikudiyl, Thokkupara P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove	14
129	K A Abraham	Kizhakkennathe, Thokkupara P.O	1.42	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Ginger, Banana	14
130	M M Useph	Munjackal, Thokkupara P.O	0.80	Pepper, Cocoa, Nutmeg, Clove, Coconut	14
131	Suma Purushan	Palackathottiyil, Thokkupara P.O	0.40	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
132	Suneesh Michile	Mappalakayil(H), Makuva P.O	1	Pepper, Cocoa, Nutmeg, Coconut	14
133	Gemini Thomas	Vettukunnel, Makuva P.O	2.5	Pepper, Cocoa, Nutmeg, Clove	14
134	N M Joy	Nanthikattu, Makuva P.O	0.8	Pepper, Cocoa, Nutmeg, Coconut	14
135	Jose M P	Moolakunnathu, Makuva P.O	1.33	Pepper, Cocoa, Nutmeg	14
136	George Thomas	Pazhukkathupuredam, Makuva P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
137	Mani Joseph	Mailackal, Makuva P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Areca nut	14
138	Joseph Michile	Thalachira, Makuva P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Areca nut	14

139	Chellappan	Koothettu, Makuva P.O	1.75	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
140	George Thomas	Kuzhikattil, Makuva P.O	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
141	Benny Augusthy	Myalil, Makuva P.O	0.6	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
142	Johnson Joseph	Mannmkunnei, Makuva P.O	1.01	Pepper, Coffee, Cocoa, Nutmeg, Cardamom	14
143	N M Mohanan	Nedumthadathil, Makuva P.O	1.2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
144	Sivan	Alackattumaliy, Makuva P.O	0.68	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
145	Wilson Kumaran	Olickal, Enchathotti, Panamkutty	0.47	Pepper, Coffee, Cocoa	14
146	Akkamma Jorly	Mukkantottathil, Makuva P.O	1	Pepper, Cocoa, Nutmeg, Coconut	14
147	James Chacko	Mlakuzhy, Makuva P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
148	Roy George	Chakkamkunnei, Makuva P.O	0.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
149	Shaji M P	Munjanattu, Makuva P.O	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
150	Jose Mathew	Mangalathil, Konnathady	1.41	Pepper, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
151	George Joseph	Mylackal, Makuva P.O	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
152	Joseph Kurian	Muthanattu, Makuva P.O	0.364	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
153	P S Joseph	Pulickal, Parathodu	1.6	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
154	Mathai Mathai	Elluparambil, Parathodu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Cardamom	14
155	Binoy Augstine	Vattakavunkal, Mankuva	1.32	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
156	Varghese K P	Kunnapallickattu, Parathodu	0.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
157	T P Maika	Tejas Bhavan, Mukkudam	0.748	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
158	Thomas M T	Mullapallil, Parathodu	1.6	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
159	D Varghese	Pulimoottil, Parathodu	1.54	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
160	Kuriakose Mathew	Nadackal, Mankadavu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
161	Stanly Augustine	Vattakavunkal, Mankuva	1.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
162	P J Mathew	Purayamapillil, Mukkudam	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
163	Krishnan	Koovayil, Mukkudam	1.2	Pepper, Cocoa, Nutmeg, Clove, Coconut	14
164	V N Sivadasan	Varambanal, Mukkudam	0.46	Pepper, Coffee, Cocoa, Coconut	14
165	Reghu T P	Thellipadavil, Mukkudam	2.2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14

166	Balakrishnan O K	Puthiyaparambil, Mukkudam	1.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
167	Joseph V A	Vattakuzhiyil, Mukkudam	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
168	Binu Paul	Nirappel, Mukkudam	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
169	Johny T K	Thonnamackal, Mukkudam	1.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
170	Saji George	Kulangara, Mankuva P.O, Konnathady	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
171	Baby Joseph	Pattiyalil, Mankuva P.O, Konnathady	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
172	V J Joseph	Vadakkumveetil, Mankuva P.O	1	Pepper	14
173	Peter George	Thalachira, Kambilikandam	1.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
174	Sojan Varghese	Poomkudiyil, Mankuva P.O	1.22	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
175	Jose M A	Mulackal, Parathodu P.O	1.62	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Areca nut	14
176	Saji Joseph	Vedikunnel, Parathodu P.O	1.00	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
177	A J Devasia	Ambattu, Parathodu P.O	0.44	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
178	M K Vijayan	Mattathil, Parathodu P.O	1.50	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
179	Antony M C	Mulackal, Parathodu P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
180	N C Joseph	Nedungattu, Parathodu P.O	0.81	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
181	Anil Jacob	Kuttikattu(H), Mankuva P.O, Konnathady	2	Pepper, Coffee, Cocoa, Nutmeg, Clove	14
182	Kunjumol Jose	Nadavillapurackal, Parathodu P.O	0.89	Pepper, Coffee, Cocoa, Coconut, Cardamom, Arecanut	14
183	Jose	Kottackal, Machiplavu	0.672	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
184	Eldhose N M	Niravathikandathil, Machiplavu	0.272	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
185	E S Sreedharan	Ellappara, Machiplavu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
186	P K Mani	Parekudiyil, Machiplavu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove	14
187	Eldho Paily	Srampikudiyil, Machiplavu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
188	Benny K E	Kuttuzarakudiyil, Machiplavu	1.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove	14
189	P K Kuriakose	Parakudiyil, Mankadavu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove	14

190	Antu Xavier	Thayyil, Machiplavu	0.8	Pepper, Cocoa, Nutmeg, Coconut	14
191	Augsthy	Kottackal, Machiplavu	0.5	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
192	Kuriachan John	Elanjickamali, Machiplavu	0.34	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
193	V C Devasia	Vadackan, Adimali	1.684	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
194	A U Paulose	Edapattu, Machiplavu P.O	1.44	Pepper, Cocoa, Nutmeg, Coconut, Clove	14
195	Renny P C	Pooppattu(H), Machiplavu P.O	0.522	Pepper, Cocoa, Nutmeg, Coconut, Coffee	14
196	Joy P I	Pooppattu(H), Machiplavu P.O	0.80	Pepper, Cocoa, Nutmeg, Coconut	14
197	K V Paulose	Komayil(H), Machiplavu P.O	0.91	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Clove	14
198	Baby K V	Kattukudiyil(H), Machiplavu P.O	0.46	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
199	Aliyar K V	Kandammali, Machiplavu P.O	0.283	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove	14
200	Michile Cheriyan	Koyikakudi, Machiplavu P.O	0.61	Pepper, Cocoa, Nutmeg, Coconut	14
201	K M Jose	Kuttikattuthottathil, Machiplavu P.O	0.80	Pepper, Cocoa, Nutmeg, Coconut, Clove	14
202	Sajimon James	Thottathimail, Machiplavu P.O	0.84	Pepper, Cocoa, Nutmeg, Coconut, Clove	14
203	P K Narayanan	Panolil, Machiplavu P.O	1.21	Pepper, Cocoa, Coconut	14
204	K S Jose	Kochuvaravathu, Machiplavu P.O	1.25	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
205	Eldhose	Thannipammedayil, Machiplavu P.O	0.80	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
206	T P Paulose	Thunappam molel, Machiplavu P.O	1	Pepper, Nutmeg, Coconut	14
207	O V Baby	Olapurackal, 14th Mile, Machiplavu	1.21	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove	14
208	Kunjumon	Olapurackal, 14th Mile, Machiplavu	1.42	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove, Cardamom	14
209	P M Thomas	Puthanpurackal, Adimali P.O	0.303	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
210	C.V.Sivan	Chamakalayil, Chattupara	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
211	Kuriakose Thomas	Kakkudiyil, Adimaly P.O	2.57	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
212	Mathew	Thokkanattu, Adimaly P.O	0.85	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Vanilla	14
213	Jacob Paul	Pullan, Adimaly	0.77	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
214	C J George	Chamaparayil, Machiplavu P.O	0.6	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
215	K K Rajendran	Kaniyarukudiyil, Machiplavu P.O	0.80	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
216	K J Thomas	Kuriakulam, Mannamkandam	1.832	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14

217	Johny George	Kochukarottu, Mannamkandam	2.8	Pepper, Nutmeg, Coconut, Clove	14
218	Anthrayos	Varanickal, Mannamkandam	2	Pepper, Cocoa, Nutmeg, Coconut	14
219	T P Issac	Thadathil, Mannamkandam	1	Pepper, Cocoa, Nutmeg, Clove	14
220	T P Varghese	Thadathil, Mannamkandam	1	Pepper, Cocoa, Nutmeg, Coconut	14
221	Babu George	Puthenpurayil, Adimali	2.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Clove Cardamom	14
222	C T Devasia	Chemplayil, Adimali	0.5	Pepper, Cocoa, Nutmeg, Coconut	14
223	Sudarsan P N	Puliyilakkattu, 1000 Acre, Mannamkandam P.O	1.21	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
224	K P Yacob	Kudiyirickal, Kathipara P.O	0.80	Pepper, Cocoa, Coconut, Cardamom	14
225	Lalu T P	Thekkumkovil, 1000 Acre, Mannamkandam P.O	0.405	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
226	Thankachan K R	Kavarumundayil, 1000 Acre	2.02	Pepper, Cocoa, Nutmeg, Coconut	14
227	Rajan C K	Chelackal, 1000 Acre	1.21	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Arecanut	14
228	K N Sukumaran	Kalarickal, 1000 Acre	1.62	Pepper, Cocoa, Nutmeg, Coconut	14
229	K N Vijayan	Kalarickal, 1000 Acre	1.01	Pepper, Coffee, Cocoa, Coconut	14
230	K Bulbendran	Kochukalayil, Kathipara P.O	0.405	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Vanilla	14
231	Ratheesh K R	Kottakakathu, 1000 Acre, Mannamkandam P.O	0.61	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
232	N O Jacob	Nellickal, 200 Acre, Mannamkandam	0.809	Pepper, Cocoa, Nutmeg, Coconut	14
233	Mathai M V	Moolamkuzhiyil, 1000 Acre, Mannamkandam P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
234	Suresh C S	Chelattu, 1000 Acre, Mannamkandam P.O	2.83	Pepper, Cocoa, Nutmeg, Coconut	14
235	Varghese K K	Kavanal, 1000 Acre, Mannamkandam P.O	1	Pepper, Cocoa, Nutmeg	14
236	P A Ramunni	Ponnankunnel, 1000 Acre, Mannamkandam P.O	1.62	Pepper, Cocoa, Nutmeg, Coconut	14
237	P G Salim	Puthanpurackal, 1000 Acre, Mannamkandam P.O	0.60	Pepper, Cocoa, Nutmeg, Coconut	14

238	P G Sathesh	Puthanpurackal, 1000 Acre, Mannamkandom P.O	0.60	Pepper, Coffee, Cocoa, Nutmeg	14
239	P G Vijayan	Puthanpurackal, 1000 Acre, Mannamkandom P.O	0.60	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Arecanut, Clove, Cardamom	14
240	Sukumaran C M	Cherukunnel, Mannamkandom P.O	0.28	Pepper, Cocoa, Nutmeg, Coconut	14
241	E P Alias	Erakuzha, 200 Acre, Adimaly	0.809	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
242	Elssy John	Kadaparambil, Adimaly	0.40	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
243	Joseph Sebastian	Kadapoor, 200 Acre, Adimaly	2.2	Pepper, Cocoa, Nutmeg, Coconut, Arecanut	14
244	Mathew K S	Kannattu, Adimaly P.O	4	Pepper, Cocoa, Nutmeg, Coconut	14
245	K I Kuriakose	Koottappala, Koompanpara	0.92	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
246	Thomas Itty Ipe	Edavaparambil, Koombanpara P.O	0.93	Pepper, Coffee, Nutmeg, Coconut, Cardamom, Vanilla	14
247	Jose George	Pullan, Koombanpara P.O	2.25	Pepper, Cocoa, Nutmeg, Coconut	14
248	P J James	Puthussery, Koombanpara P.O	1	Pepper, Cocoa, Nutmeg, Coconut, Clove	14
249	Antony	Thachil, Koombanpara P.O	0.61	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
250	K C Mathai	Kochakudy, Koombanpara P.O	0.87	Pepper, Cocoa, Nutmeg, Coconut	14
251	K J George	Konduparambil, Koombanpara P.O	4	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
252	Joly Thomas	Padinjarekkara, Koombanpara P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
253	P V Thankachan	Parayil, Koombanpara P.O	1.72	Pepper, Coffee, Nutmeg, Coconut	14
254	Babu K P	Theppala, Koombanpara P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
255	Ali K K	Kammalayil, Koombanpara P.O	0.47	Pepper, Coffee, Cocoa, Coconut, Arecanut	14
256	T S Kassin	Thozhithikandathil, Koombanpara P.O	1.62	Pepper, Coffee, Nutmeg, Coconut	14
257	O M Ansar	Uthinattu, Koombanpara P.O	0.27	Pepper, Nutmeg, Coconut	14
258	K P Johny	Kumankottil, Anaviratty	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Ginger, Banana	14
259	Shiju Peter	Poonelil, Anaviratty P.O	0.52	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
260	K E Narayanan	Kalathikudiylil, Anaviratty P.O	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Banana	14

261	Elizabeth Johny	Poonelil, Anaviratty P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Tamarind	14
262	Selin George	Poonelil, Anaviratty P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut Cardamom, Tamarind, Banana	14
263	Reji Thomas	Maliackal, Anaviratty P.O	1.62	Pepper, Cocoa, Nutmeg, Coconut, Arecanut, Banana	14
264	Somarajan K P	Kolathikudiyil, Anaviratty P.O	0.8	Tamarind, Allspice	14
265	K P Mathew	Keerikkattil, Anaviratty P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
266	George M V	Maliyil, Anaviratty P.O	2	Tamarind, Banana	14
267	Susan Paulose	Madathiparambil, Anaviratty P.O	1.01	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
268	E R Janardhanan	Ellickal, Anaviratty P.O	2	Tamarind, Banana	14
269	Varghese	Keerikkattil, Anaviratty P.O	1.15	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut, Tamarind	14
270	Babu K	Koonamparayil, Anaviratty P.O	1.21	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Tamarind	14
271	Babu Paulose	Tattarayil, Anaviratty P.O	2	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Tamarind	14
272	P P Varghese	Padayattil, Anaviratty P.O	0.809	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Tamarind	14
273	P C Cheriyan	Poonelil, Anaviratty P.O	0.607	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Tamarind	14
274	M P Thankachan	Mazhuvancherry, Anaviratty P.O	0.405	Pepper, Coffee, Cocoa, Nutmeg, Cardamom, Tamarind	14
275	Fr. Varghese	Betheny Dhyana Asramam, Anaviratty P.O	1.60	Tamarind, Banana	14
276	P D Sunny	Poondliy, Koombanpara P.O	0.405	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
277	Saji Abraham	Chettingal, Selliampara P.O	0.80	Pepper, Coffee, Cocoa	14
278	T K Bhaskaran	Nadukkuttu, Selliampara P.O	0.40	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Banana	14
279	C K Prakash	Chali, Selliampara P.O	0.57	Pepper, Coffee, Cocoa, Clove, Coconut	14

280	A V George	Avarapattu, Selliampara P.O	1.21	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Banana	14
281	T K Viswambharan	Thamasveetil, Selliampara P.O	1.32	Pepper, Cocoa, Coconut	14
282	M P Prabhakaran	Maruthumkallayil, Selliampara P.O	2.83	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
283	Rojan George	Kalloor, Selliampara P.O	0.40	Banana	14
284	K C Jose	Kallathu, Selliampara P.O	2.36	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
285	M H Maideen	Manjapallil, Selliampara P.O	0.20	Pepper, Cocoa, Nutmeg, Coconut	14
286	K P Thankappan	Konippattu, Selliampara P.O	1.60	Pepper, Coffee, Cocoa, Coconut	14
287	P M Joy	Panamkunnel, Padiccappu P.O, Pazhampillichal	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
288	Mathew Mathai	Pallithazham, Pazhampillichal	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
289	P K Kuttapai	Panavally, Padiccappu P.O, Pazhampillichal	1.21	Pepper, Coffee, Cocoa, Clove, Coconut	14
290	Karthiyani	Vadakekkara, Padiccappu P.O, Pazhampillichal	0.405	Pepper, Coffee	14
291	Mary Francis	Thonduparambil, Padiccappu P.O, Pazhampillichal	0.60	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
292	Chackochan E P	Erambankudiyil, Padiccappu P.O, Pazhampillichal	0.60	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Vanilla	14
293	Sony Joseph	Olickal, Padiccappu P.O, Pazhampillichal	0.60	Pepper, Coffee, Cocoa, Coconut	14
294	Jaisamma Jose	Kaniyamkunnel, Padiccappu P.O, Pazhampillichal	0.30	Pepper, Coffee, Coconut, Arecanut	14
295	Rajeev P S	Pulickamackal, Padiccappu P.O, Pazhampillichal	0.800	Pepper, Cocoa, Coconut	14
296	Raveendran	Thekkedath, Padiccappu P.O, Pazhampillichal	0.70	Pepper, Coffee, Coconut	14
297	P M John	Pidiyanickal, Padiccappu P.O, Pazhampillichal	0.70	Pepper, Coffee, Cocoa, Coconut	14
298	Jose Auseph	Panaparayil, Padiccappu P.O, Pazhampillichal	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14

299	P D Kutty	Parapillikkunel, Padicappu P.O, Pazhampillichal	1.21	Pepper, Coffee, Cocoa, Coconut	14
300	K J Baby	Koovayil, Padicappu P.O, Pazhampillichal	0.60	Pepper, Coffee, Cocoa, Coconut	14
301	Antony Devasia	Parayadiyil, Padicappu P.O, Pazhampillichal	0.60	Pepper, Coffee, Cocoa, Coconut	14
302	P M Jose	Panamkunel, Padicappu P.O, Pazhampillichal	0.60	Pepper, Coffee, Cocoa, Coconut	14
303	P M Joseph	Pallithazhathu, Padicappu P.O, Pazhampillichal	0.80	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
304	Jijil P D	Panamkunel, Padicappu P.O, Pazhampillichal	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
305	C M Kuriakose	Chaliyathu, Pazhmpillichal P.O	0.60	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
306	O V George	Olickal, Padicappu P.O, Pazhampillichal	0.80	Pepper, Coffee, Cocoa, Nutmeg, Coconut Vanilla, Arecanut	14
307	Biju Kurian	Mattathil, Pottankadu	1.72	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
308	Sukumari Sasidharan	Vettukallammackal, Elllackal	1.092	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
309	Mathew Joseph	Mundanattu, Kunjithanni	2	Pepper, Coffee, Cocoa, Coconut, Cardamom	14
310	T R Vijayan	Thadiathil, Kunjithanni p.o	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
311	Joby Thomas	Kumminiyil, Chithirapuram p.o, Eetticity	0.202	Pepper, Nutmeg, Coconut	14
312	Joshy Thomas	Kumminiyil, Chithirapuram p.o, Eetticity	0.6	Pepper, Coffee, Cocoa, Coconut, Cardamom	14
313	K Sreekandanpillai	Pulickal, Pottankadu P.O	0.80	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
314	C K Raveendran	Chekudirivilayil, Pallivasal P.O, Kunjithanni	1.01	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
315	P V Joy	Pulickakunel, Kunjithanni P.O	0.84	Pepper, Cocoa	14
316	Omana Shajan	Mangalathu, Elllackal	1.61	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14

317	James Thomas	Kuzhiyamplayil, Kunjithanni P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
318	Raveendran N G	Neeliyanickal, Pothupara P.O	1.21	Pepper, Cocoa, Nutmeg, Coconut, Cardamom	14
319	C R Surendran	Chettuthadathil, Kunjithanni P.O	0.49	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Tamarind	14
320	P K Kusalán	Palackathottiyil, Kunjithanni P.O	0.5	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
321	Abin Jose	Parackal, Kunjithanni P.O	2.5	Pepper, Cocoa, Nutmeg, Clove	14
322	V M Kumaran	Vellapallil, Kunjithanni P.O	1.02	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
323	P V Varghese	Parayil, Kunjithanni P.O	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
324	George Thomas	Mannoor, Kunjithanni P.O	2	Pepper	14
325	M K Bhaskaran	Vadakemuriyil, Pottankad P.O	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
326	K T Thomas	Kocharackal, Pottankad P.O	0.59	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Vanilla	14
327	Jayaprakash	Krishnavilasam, Kunjithanni P.O	1.42	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
328	Sarojini M R	Manjirickal, Koragatti P.O	0.16	Pepper, Coffee, Cocoa, Coconut, Cardamom	14
329	Sasi K K	Kandathinkarayil, Koragatti P.O	0.80	Pepper, Coffee, Cocoa, Nutmeg	14
330	Krishnankutty M K	Manjackal, Koragatti P.O	0.60	Pepper, Coffee, Coconut, Cardamom	14
331	Saji T K	Thottungal, Koragatti P.O	0.60	Pepper, Coffee, Cocoa, Nutmeg, Cardamom	14
332	John George	Puliyannackal, Koragatti P.O	6	Pepper, Coffee, Cocoa, Nutmeg, Cardamom, Vanilla, Arecanut	14
333	Sahadevan V N	Vazhemyalil, Koragatti P.O	2	Pepper, Coffee, Cocoa, Nutmeg, Cardamom, Arecanut	14
334	K K Raghavan	Kochupurackal, Koragatti P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
335	Ammini Velu	Alackal, Koragatti P.O	1.52	Pepper, Coffee, Cocoa, Nutmeg, Cardamom, Banana	14
336	Sicily John	Chettukuzhy, Koragatti P.O	0.22	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Vanilla, Arecanut, Ginger, Turmeric	14
337	Sudhakaran K	Varikkaplackal, Koragatti P.O	1.00	Pepper, Coffee, Nutmeg, Coconut, Cardamom, Arecanut, Ginger, Turmeric, Banana	14

338	Geeboy George	Pallivathuckal, Kurisupara P.O	3.2	Pepper, Coffee, Cardamom, Arecanut, Ginger, Turmeric, Banana	14
339	T J Mathew	Thadathiplackal, Koragatty P.O	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut, Ginger, Turmeric, Allspice, Banana	14
340	C P John	Chettukuzhy, Koragatty P.O	2.42	Pepper, Coffee, Cardamom	14
341	A V Soman	Ennikattu, Valara P.O	0.60	Pepper, Coconut	14
342	Dharmalal D	Malayanunnel, Valara P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
343	K G Ramakrishna Pillai	Koushubham, Valara P.O	0.80	Pepper, Cocoa, Nutmeg, Coconut	14
344	Rajani Balakrishnan	Kaitholil, Valara P.O	1	Pepper, Nutmeg, Clove, Coconut	14
345	K K Divakaran	Kunnel, Valara P.O	0.40	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
346	Madhusushanan	Tharanivas, Valara P.O	0.80	Pepper, Nutmeg, Coconut	14
347	Harikrishnan K G	Kochutharayil, Valara P.O	0.40	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
348	C P Pappachan	Chelattu, Valara P.O	1.62	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
349	Biju C P	Chittayathu, Valara P.O	0.80	Pepper, Cocoa, Nutmeg, Coconut	14
350	Girija Pushpakumar	Devivilasam, Valara P.O	0.36	Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
351	Kuriakose T V	Thomprayil, Valara P.O	0.70	Pepper, Nutmeg, Coconut	14
352	N J George	Nedugattu, Valara P.O	1.4	Pepper, Nutmeg, Coconut	14
353	Roy Antony	Pothanikattu, Kallar Kutty	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
354	Sabu Andrews	Pukadiyil, Koomapanpara	0.6	Banana	14
355	George Varghese	Kochukarottu, Kallar Kutty	2.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Ginger, Banana	14
356	Roy Edavakandom	Edavakandam, Kallar Kutty	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
357	K M George	Karakumbil, Kallar Kutty	2	Pepper, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
358	K P Mathai	Kollelil, Koompanpara	0.8	Pepper, Cocoa, Nutmeg, Coconut	14
359	Sasidharan Nair	Kaniyamparambil, Koompanpara	1	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14

360	K R Ashok Kumar	Kaniyamparambil, Koompanpara	2	Banana	14
361	P S Mohankumar	Muthukulathu	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut Cardamom, Arecanut, Banana	14
362	James C C	Chakkalayil, Kallarkutty	0.8	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Arecanut, Turmeric, Banana	14
363	V J Jose	Vettikombil, Koompanpara	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut, Tamarind	14
364	T K Hariharan	Thoonanickal, Koombanpara P.O, Nayikunnu	1.62	Pepper, Coffee, Cocoa, Coconut, Arecanut, Banana	14
365	T H Anilkumar	Thoonanickal, Koombanpara P.O, Nayikunnu	1.62	Pepper, Coffee, Cocoa, Coconut, Arecanut, Banana	14
366	N Suresh Babu	Ozhukayil, Koombanpara P.O, Nayikunnu	0.60	Pepper, Coffee, Cocoa, Coconut, Cardamom	14
367	P V Augustine	Pothanikattu, Kallarkutty P.O	1.5	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut Cardamom, Arecanut	14
368	Saju Scaria	Olickal, Kallarkutty P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Banana	14
369	Sunny Abraham	Elavumkunnei, Kallarkutty P.O	1.62	Banana	14
370	Mani Kuruvila	Palackal, Kallarkutty P.o	0.80	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14
371	Augustine Augusty	Manathoor, Kallarkutty P.O	3	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut Cardamom, Vanilla, Arecanut	14
372	P S Sebastian	Plathottam, Vellathooval	0.80	Pepper, Cocoa, Nutmeg, Coconut	14
373	M M Joy	Mlakuzhiyil, Ellackal po	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut Cardamom, Arecanut	14
374	C A Joy	Chemimattu, Ellackal	2	Pepper, Cocoa, Nutmeg, Clove, Coconut	14
375	Tony Joseph	Areecal, Thekkumkanam	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut Cardamom, Tamarind, Banana	14
376	P K Francies	Puthen purayil, Ellackal	2.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
377	T D George	Thumpamattathil, Ellackal	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut	14

378	Wilson Mathew	Kanjirathumkunnel, Ellackal	0.6	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
379	P K Kurian	Puthanpurayil, Ellackal	3.2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut, Tamarind	14
380	Sabu Thomas	Paravarakathu, Ellackal	1.68	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Banana	14
381	George Augustine	Kunnumpurathu, Ellackal	2	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Arecanut, Banana	14
382	Joy Abraham	Mangalathu, Ellackal	0.8	Pepper, Cocoa, Nutmeg, Coconut	14
383	P J Varghese	Perumlathu, Ellackal	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
384	C K Varkey	Chunayamackal, Ellackal P.O	3	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut	14
385	George Thomas	Edapallil, Ellackal P.O, Pothupara	0.80	Pepper, Coffee, Nutmeg, Clove	14
386	K K Madhavan	Kanjiramthadathil, Ellackal	0.4	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
387	Rosamma George	Thumbamattathil, Ellackal	0.4	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14
388	Augustine Joseph	Nirappel, Marakkanam	0.6	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
389	Joseph Joseph	Kulangara, Konnathady	1.66	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom, Ginger	14
390	George Joseph	Maprayil, Konnathady	0.8	Pepper, Cocoa, Nutmeg, Clove, Coconut	14
391	Thressiamma	Mundackal, Konnathady	1	Pepper, Cocoa, Nutmeg, Clove	14
392	Benny Joseph	Mapprayil, Konnathady	1.40	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
393	E V Thomas	Edavarambel, Ponnudi	1.488	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Vanilla, Allspice	14
394	Jose Abraham	Alanickal, Ponnudi	0.56	Pepper, Coffee, Cocoa, Nutmeg, Clove	14
395	Augsthy	Mamoottilarackal, Konnathady	0.72	Pepper, Coffee, Cocoa, Nutmeg, Coconut, Cardamom	14

396	Varghese K P (Johny)	Edayodiyil, Ponnudi	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Arecanut	14
397	Devasia Joseph	Mamoottilarackal, Konnathady	1.2	Pepper, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
398	Joseph George	Kolathupadavil, Ponnudi, Konnathadi	2	Pepper, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Arecanut	14
399	Jose George	Maparayil, Konnathadi P.O	0.44	Pepper, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
400	K K Thomas	Kunnamkuzhackal, Konnathadi P.O	1	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Arecanut	14
401	Jolly Joseph	Kochettonnil, Ponnudi P.O	1	Pepper, Cocoa, Nutmeg, Coconut, Cardamom, Ginger	14
402	Benny Joseph	Adichelamackal, Ponnudi P.O	1	Pepper, Coffee, Cocoa, Clove, Coconut, Cardamom	14
403	N D Paul	Nirappel, Ponnudi, Konnathadi	1.62	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
404	Siby Joseph	Ambazhathinal, Ponnudi, Konnathadi	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Ginger	14
405	A K Joseph	Ambazhathinal, Ponnudi, Konnathadi	0.8	Pepper, Coffee, Cocoa, Nutmeg, Clove, Cardamom	14
406	Sunny Mathew	Oravakandathil, Ponnudi, Konnathadi	0.68	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom	14
407	Augustine Augusthy	Kunnumpurathu, Konnathadi	1	Pepper, Cocoa, Nutmeg, Coconut	14
408	Baby Mani	Thakkayil, Konnathadi P.O	1	Pepper, Cocoa, Nutmeg, Clove, Coconut	14
409	V J Mathew	Velamparambil, Ponnudi, Konnathadi P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut, Cardamom, Ginger, Turmeric	14
410	C V Mathew	Chulliyalil, Ponnudi, Konnathadi P.O	1	Pepper, Coffee, Cocoa, Nutmeg, Clove, Coconut	14
411	Thomas Devasia	Vettukattil, Konnathadi P.O	1	Pepper, Coffee, Cocoa, Coconut, Cardamom	14

3. List of PGS certified farmers of Kerala

SI No	Group Detail			Farmers	Area in ha	AEU No.
1	Group :	AADHI	S.No	Farmer	Area	AEU
	Group Leader:	PRAMOD LAL	1	Mr. A Jose	0.8093	8
	Regional Council :	Thanal	2	Mr. Arun Rs	0.0202	
	Village :	MALAYINKEEZHU	3	Mr. Asok Kumar A	0.0404	
	Sub district :	Neyyattinkara	4	Mr. Pramod Lal	0.1214	
	Block :	NEMOM	5	Mr. Sabari Satheesh	0.0404	
	District :	TRIVANDRUM		Total Area	1.0317	
	Registration NO :	LG0900021738				
2	Group :	AASRITHA	S.No	Farmer	Area	AEU
	Group Leader :	MAMMUNNI A	1	Mr. Ebrahim Kk	0.1	13
	Regional Council :	VFPCK	2	Mr. Mammunni A	0.1	
	Village :	ELANKUR	3	Mr. Muhammed C	0.24	
	Sub district :	Ernad	4	Mr. Sankaran M	0.4	
	Block :	WANDOOR	5	Mr. Shoukathali Ck	0.2	
	District :	MALAPPURAM	6	Mr. Sreeraman	0.28	
	Registration NO :	LG0900005218	7	Mrs. Jaicy James	0.2	
			Total Area	1.52		
3	Group :	AICHERY	S.No	Farmer	Area	AEU
	Group Leader :	JAMES A J	1	Shri Cheriyen K V	0.25	13
	Regional Council :	VFPCK	2	Shri James A J	0.36	
	Village :	NEDIYANGA	3	Shri Jose	0.28	
	Sub district :	Taliparamba	4	Shri Joy	0.28	
	Block :	IRIKKUR	5	Shri Vargheese N J	0.23	
District :	KANNUR		Total Area	1.4		
Registration NO :	LG0900001924					
4	Group :	AISHWARYA	S.No	Farmer	Area	AEU
	Group Leader :	SAJIKUMARI M	1	Miss. Latha	0.0404	8
	Regional Council :	Thanal	2	Miss. Preetha	0.0526	
	Village :	VENGANOOR	3	Miss. Sajikumari	0.1982	
	Sub district :	Thiruvananthapuram	4	Miss. Sujatha S	0.0809	
	Block :	ATHIYANNOOR	5	Miss. V Sobha	0.093	
	District :	TRIVANDRUM	6	Miss. Vijayakumari B	0.1214	
Registration NO :	LG0900017917		Total Area	0.5865		
5	Group :	AISHWARYA	S.No	Farmer	Area	AEU
	Group Leader :	PAILYKUNJU	1	Mr. George Skària	1	9
	Regional Council :	VFPCK	2	Mr. V C Manikunju	0.59	
	Village :	THIRUVANIYOOR	3	Shri K A Jacob	1	
	Sub district :	Kunnathunad	4	Shri K P Eliyas	0.44	
	Block :	VADAVUCODE	5	Shri K.K.Narayanankutty	1	
	District :	ERNAKULAM	6	Shri Pailykunju	1	
	Registration NO :	LG0900003134	7	Shri Sasi	1	
			8	Shri Varghese	1	
			Total Area	7.03		

6	Group :	AISWARYA	S.No	Farmer	Area	AEU 13
	Group Leader :	ABOBACKER K	1	Mr. Aboobacker K	0.4	
	Regional Council :	VFPCK	2	Mr. Ahammed Kutty	0.16	
	Village :	PORUR	3	Mr. Alavikutty N	0.8	
	Sub district :	Nilambur	4	Mr. Chandran N	0.26	
	Block :	NILAMBUR	5	Mr. Muhammed Kutty Pp	0.72	
	District :	MALAPPURAM	6	Mr. Saidali Kammu T	0.4	
	Registration NO :	LG0900005227	7	Mr. Sivagiri	0.65	
			Total Area	3.39		
7	Group :	AISWARYA WAYANAD	S.No	Farmer	Area	AEU 21
	Group Leader :	SHIBU	1	Mr. Biji Kumar Thattupurackal	0.2834	
	Regional Council :	Wayanad Social Service Society	2	Mr. Chacko Vettikattuputhenpura	0.2834	
	Village :	PULPALLI	3	Mr. Francis Nedumthanath	0.6073	
	Sub district :	Sulthanbathery	4	Mrs. Shyla Puthichira	0.8097	
	Block :	SULTHAN BATHERY	5	Shri Balan K K Kammalamkunnath	1.9798	
	District :	WAYANAD	6	Shri George T U Thottupurath(Secretary)	1.0364	
	Registration NO :	LG0900001184	7	Shri Joseph Punchakkara	2.0121	
			8	Shri Lathika Nadackal	0.4049	
			9	Shri Leelamma Thekkanattu	2.834	
			10	Shri Madhavan A K Ayyanparayil	0.6073	
			11	Shri Mathai Punchakara	1.6194	
			12	Shri Rajeev Ayyanparayil	0.5263	
			13	Shri Reji Puthenpurackal	0.3927	
			14	Shri Rejimon George Naduparambil	0.5263	
			15	Shri Sasikumar Puthenveettil	1.1741	
			16	Shri Shibu John Plavanakuzhiyil (President)	1.5385	
			17	Shri Soman Kodikulath	0.6478	
			18	Shri Stalin M M Mangambra	0.2024	
			Total Area	17.4858		
8	Group :	AJANOOR I	S.No	Farmer	Area	AEU 2
	Group Leader :	DINESHAN.V.M.	1	Shri A.Damodharan Nair	0.47	
	Regional Council :	VFPCK	2	Shri Baiju.R	2.5	
	Village :	AJANUR	3	Shri Dineshan.V.M.	2	
	Sub district :	Hosdurg	4	Shri Gopinathan.M	0.2	
	Block :	KANHANGAD	5	Shri P.A.Thomaas	1.28	
	District :	KASARGOD	6	Shri Ravi.N	3	
	Registration NO :	LG0900005274		Total Area	9.45	

9	Group :	AJANOOR12	S.No	Farmer	Area	AEU
	Group Leader :	K KAMARAJAN	1	Shri Ashokan K	0.104	2
	Regional Council :	VFPCK	2	Shri K Kamarajan	0.52	
	Village :	CHITHARI	3	Shri K.V.Narayanan	0.28	
	Sub district :	Hosdurg	4	Shri Karunakaran.T	0.548	
	Block :	KANHANGAD	5	Shri Krishnan V	0.388	
	District :	KASARGOD	6	Shri Kunhikrishnan.Nambiar	0.248	
	Registration NO :	LG0900002731	7	Shri Kunhiraman.V	0.2	
			8	Shri Prajeesh.B	1	
			9	Shri Raghavan.K.V	0.6	
			10	Smt. Bhanumathi.V	0.08	
		11	Smt. Karthyayani.K	0.08		
			Total Area	4.048		
10	Group :	AMALA	S.No	Farmer	Area	AEU
	Group Leader :	THOMAS M D	1	Mrs. Mary	0.4	10
	Regional Council :	VFPCK	2	Mrs. Reena	1.54	
	Village :	THIRUMUKKULAM	3	Shri Ittoop	0.364	
	Sub district :	Mukundapuram	4	Shri Ittoop Joseph	1.4	
	Block :	MALA	5	Shri Mohanan N K	0.448	
	District :	THRISSUR	6	Shri Poullose K	0.52	
	Registration NO :	LG0900001914	7	Shri Sajeev P F	0.588	
			8	Shri Sugathan P P	0.312	
			9	Shri Thomas M D	0.374	
			10	Shri Thomas P P	0.7	
			11	Shri Yacob P A	0.4	
			12	Smt. Kochu Thresya	0.94	
		13	Smt. Sreeja Mohanan	0.504		
			Total Area	8.49		
11	Group :	AMBARA	S.No	Farmer	Area	AEU
	Group Leader :	GEORGE THOMAS	1	Mr. Mathew V. J	1.32	12
	Regional Council :	VFPCK	2	Mr. P.B Satheesh Kumar	0.12	
	Village :	ERATTUPETTA	3	Mr. P.R Radhakrishnan Nair	0.66	
	Sub district :	Meenachil	4	Mr. Siji Mathew	0.5	
	Block :	ERATTUPETTA	5	Shri George Thomas	0.328	
	District :	KOTTAYAM		Total Area	2.928	
Registration NO :	LG0900003981					
12	Group :	AMRITHA	S.No	Farmer	Area	AEU
	Group Leader :	T V JOSE	1	Shri K P Wilson	0.64	10
	Regional Council :	VFPCK	2	Shri Sajeev Antony	0.2	
	Village :	THIRUMUKKULAM	3	Shri T V Jose	2	
	Sub district :	Mukundapuram	4	Shri Thomas	0.272	
	Block :	MALA	5	Smt. Retty Jose	0.1	
	District :	THRISSUR		Total Area	3.212	
Registration NO :	LG0900002139					

13	Group :	AMRUTHAM BALAL	S.No	Farmer	Area	AEU
	Group Leader :	JOSE THOMAS	1	Shri A.M.Joseph	0.6	11
	Regional Council :	VFPCCK	2	Shri George Thomas	1	
	Village :	MALOTH	3	Shri Jose Thomas	0.4	
	Sub district :	Hosdurg	4	Shri Thomas Mutholil	0.4	
	Block :	NILESHWAR	5	Shri Thomas.K.J	1.16	
	District :	KASARGOD		Total Area	3.56	
Registration NO :	LG0900005451					
14	Group :	ANASHWARA AJANUR	S.No	Farmer	Area	AEU
	Group Leader :	V.NARAYANAN NAIR	1	Shri Narayanan	0.55	2
	Regional Council :	VFPCCK	2	Shri P.Bhaskaran	0.37	
	Village :	AJANUR	3	Shri Raghunathan.A	0.92	
	Sub district :	Hosdurg	4	Shri T.Balakrishnan	1.33	
	Block :	KANHANGAD	5	Shri V.Narayanan Nair	0.3	
	District :	KASARGOD		Total Area	3.47	
Registration NO :	LG0900004674					
15	Group :	ANCHAL	S.No	Farmer	Area	AEU
	Group Leader :	SHAJAHAN.U	1	Shri Babu	1	12
	Regional Council :	VFPCCK	2	Shri Jyothi.V	0.12	
	Village :	ANCHAL	3	Shri Prakash.P	1	
	Sub district :	Pathanapuram	4	Shri Rahim.M.A	1	
	Block :	ANCHAL	5	Shri Saji.N.S	3	
	District :	KOLLAM	6	Shri Shajahan.U	1	
	Registration NO :	LG0900001719	7	Shri Sreekumar	1	
			8	Shri Sundaresan	1	
			9	Shri Vinu.M	1	
			Total Area	10.12		
16	Group :	ANGURAM	S.No	Farmer	Area	AEU
	Group Leader :	K L PAULY	1	Mr. Dayanandan	0.41	5
	Regional Council :	Thanal	2	Mr. K L Pauly	2.85	
	Village :	VADAKKUMKARA	3	Mr. K Raju	0.55	
	Sub district :	Mukundapuram	4	Mr. Mathachan	0.85	
	Block :	IRINJALAKKUDA	5	Smt. Sobhana G Panicker	0.64	
	District :	THRISSUR		Total Area	5.3	
Registration NO :	LG0900005483					
17	Group :	ANNAPOORNA CHERIYAKKARA	S.No	Farmer	Area	AEU
	Group Leader :	GOPALAN.P	1	Shri A.V.Kunhikrishnan	0.4	11
	Regional Council :	VFPCCK	2	Shri Bhaskaran.A	0.36	
	Village :	KAYYUR	3	Shri Gopalan.P	0.68	
	Sub district :	Hosdurg	4	Shri Ramachandran.M	0.2	
	Block :	NILESHWAR	5	Shri Sudhakaran.P	0.14	
	District :	KASARGOD	6	Smt. Kalyani.P	0.14	
	Registration NO :	LG0900006426	7	Smt. Vijayakumari.K	0.45	
			Total Area	2.37		

18	Group :	ANUGRAHA	S.No	Farmer	Area	AEU
	Group Leader :	RAVEENDRAN P	1	Mr. Gopalan	0.4	
	Regional Council :	VFPCK	2	Mr. Mohanan Kp	0.4	
	Village :	ARIYALLUR	3	Mr. Prakasan Kv	0.4	
	Sub district :	Tirurangadi	4	Mr. Rasak Pp	0.2	
	Block :	TIRURANGADI	5	Mr. Raveendran	0.2	
	District :	MALAPPURAM	6	Mr. Satheesan K	0.2	
	Registration NO :	LG0900005235	7	Mr. Sivadasan	0.2	
			8	Mr. Sivadasan Kv	0.6	
			9	Mr. Suresan Mt	0.2	
			10	Mr. Suresh Nm	0.4	
			11	Mr. Velayudhan K	0.2	
			Total Area	3.4		
19	Group :	ANUGRAHA	S.No	Farmer	Area	AEU
	Group Leader :	ARUN T JOY	1	Shri Arun T	0.68	
	Regional Council :	VFPCK	2	Shri George N Joseph	1.5	
	Village :	KEERAMPARA	3	Shri K J Jose	2	
	Sub district :	Kothamangalam	4	Shri Mathew	0.15	
	Block :	KOTHAMANGALAM	5	Shri Moncy	2.42	
	District :	ERNAKULAM	6	Smt. Mary	1	
	Registration NO :	LG0900003866		Total Area	7.75	
20	Group :	ANUGRAHA KAYYUR	S.No	Farmer	Area	AEU
	Group Leader :	C.CHANDANKUNHI MASTER	1	Shri Apootti.K	0.36	
	Regional Council :	VFPCK	2	Shri C.Chandankunhi Master	2.21	
	Village :	KAYYUR	3	Shri K.V Kumaran	4.87	
	Sub district :	Hosdurg	4	Shri Kumaran.K	0.91	
	Block :	NILESHWAR	5	Shri P.K.Baburaj	0.78	
	District :	KASARGOD	6	Smt. Prameela.E.V	0.1	
	Registration NO :	LG0900004521		Total Area	9.23	
21	Group :	ARIPPARA	S.No	Farmer	Area	AEU
	Group Leader :	VARGHESE PADINJAREKARA	1	Shri Biju George	0.1	
	Regional Council :	VFPCK	2	Shri Jobi C Sebastian	0.1	
	Village :	THIRUVAMBADI	3	Shri Joseph Paul	0.1	
	Sub district :	Kozhikode	4	Shri Varghese Padinjarekara	0.1	
	Block :	KODUVALLY	5	Smt. Siji Varghese	0.1	
	District :	KOZHICODE		Total Area	0.5	
	Registration NO :	LG0900011274				
22	Group :	AROGYA	S.No	Farmer	Area	AEU
	Group Leader :	FIROZ P	1	Mr. Abdul Nahuk	0.1	
	Regional Council :	VFPCK	2	Mr. Abdullakutty P	0.1	
	Village :	EDAVANNA	3	Mr. Ebrahim M	0.1	

	Sub district : Ernad	4	Mr. Firoz P	0.1	
	Block : AREAKODE	5	Mr. Irshad P	0.1	
	District : MALAPPURAM	6	Mr. Jamsheed T	0.1	
	Registration NO : LG0900005398	7	Mr. Krishnan K	0.1	
		8	Mr. Nisamudeen	0.1	
		9	Mr. Ramees Ahammed	0.1	
		10	Mr. Shahin P	0.1	
			Total Area	1	
23	Group : ARUL	S.No	Farmer	Area	AEU
	Group Leader : DADU BASTIAN	1	Shri Dadu Bastian	1.2	6
	Regional Council : Thanal	2	Shri Francis George	2.0234	
	Village : ALATHUR	3	Shri K.S Sajieve	1.2347	
	Sub district : Mukundapuram	4	Shri Ramesh.V.B	0.2878	
	Block : CHALAKKUDY	5	Shri Sibil Jose	0.2023	
	District : THRISSUR		Total Area	4.9482	
	Registration NO : LG0900006615				
24	Group : ARYANAD JAIVA	S.No	Farmer	Area	AEU
	Group Leader : SHAJI JOHN	1	Shri Anirudhan	0.1	12
	Regional Council : VFPCCK	2	Shri Baiju.K	0.1	
	Village : UZHAMALACKAL	3	Shri Prafulla Chandran Nair	0.1	
	Sub district : Nedumangad	4	Shri Shaji John	0.4	
	Block : VELLANAD	5	Shri Sukumaran.R	0.1	
	District : TRIVANDRUM		Total Area	0.8	
	Registration NO : LG0900004022				
25	Group : ASHTAMI	S.No	Farmer	Area	AEU
	Group Leader : LATHA K NAIR	1	Shri Latha K	0.048	8
	Regional Council : Thanal	2	Smt. Radha.S	0.093	
	Village : VENGANNOOR	3	Smt. Sasindra Kumar	0.101	
	Sub district : Thiruvananthapuram	4	Smt. Sharmila.P.V	0.162	
	Block : ATHIYANNOOR	5	Smt. Sulaika.S	0.02	
	District : TRIVANDRUM		Total Area	0.424	
	Registration NO : LG0900001792				
26	Group : ATHIRA ORANIL	S.No	Farmer	Area	AEU
	Group Leader : P THAMBAYI	1	Shri P Thambayi	0.007	11
	Regional Council : VFPCCK	2	Smt. A.Kammadathu	0.5	
	Village : MADIKAI	3	Smt. A.Kunhammar	1.4	
	Sub district : Hosdurg	4	Smt. Bindhu.M	0.1	
	Block : KANHANGAD	5	Smt. Janaki.M	0.1	
	District : KASARGOD	6	Smt. K Karthiyayaniyamma	0.23	
	Registration NO : LG0900003851	7	Smt. K.Narayani	0.5	
		8	Smt. Karthyayani P	0.124	
		9	Smt. Muthani P	0.072	
		10	Smt. P.Echira	1	
		11	Smt. P.Leela	0.1	
		12	Smt. Sarojini P	0.06	
			Total Area	4.193	

27	Group :	AVANI	S.No	Farmer	Area	AEU
	Group Leader :	ANISHIDA G V	1	Miss. Sabeena	0.0121	8
	Regional Council :	Thanal	2	Mr. Vishnu	0.0121	
	Village :	VENGANOOR	3	Smt. Anishida G	0.04	
	Sub district :	Thiruvananthapuram	4	Smt. Prameela A R	0.0607	
	Block :	ATHIYANNOOR	5	Smt. Sheela	0.0242	
	District :	TRIVANDRUM		Total Area	0.1491	
	Registration NO :	LG0900009858				
28	Group :	AVANI AMARAKUNI	S.No	Farmer	Area	AEU
	Group Leader :	KURIKOSE V.JL	1	Shri Balakrishnan Kuroor (Mullackal)	0.30364	21
	Regional Council :	Wayanad Social Service Society	2	Shri Devasia A.J Areekattu	0.89068	
	Village :	PULPALLI	3	Shri Divakaran Vettuthuruthel	0.20242	
	Sub district :	Sulthanbathery	4	Shri Gopi K.P Kizhakeveetil	0.7004	
	Block :	SULTHAN BATHERY	5	Shri John Chakkunkal	0.40485	
	District :	WAYANAD	6	Shri Jose Cherikkanampurathu	0.20242	
	Registration NO :	LG0900001176	7	Shri Joy Thomas Thundiyil	1.01619	
			8	Shri Joy(Scaria) Vellapallil	0.27125	
			9	Shri Kuriakose.V.J Vattakunnel	1.417	
			10	Shri Narayanan Puthenpurackal	0.40485	
			11	Shri Narayanan V P Vettuthuruthel	0.89068	
			12	Shri Sebastian Arackal	0.89068	
			13	Shri Sibi Velukavil	0.40485	
			14	Shri Subash P R Puthenpurackal	1.59919	
			15	Shri Thomas K P Kurichathu	0.80971	
			16	Smt. Annakutty Arackal	0.7085	
			17	Smt. Jessy Joy Thundiyil	0.40485	
			18	Smt. Mary (Mariyam) Velukavil	1.01214	
			19	Smt. Mary Kuriakose Vattakunnel	0.80971	
			20	Smt. Pathmavathi Randukallinkal	0.58704	
			21	Smt. Sreedevi Mullackal	1.32793	
			22	Smt. Sudharmini Charivulaputhenveedu	0.15384	
			23	Smt. Sumavathi Mullackal	0.2834	
			24	Smt. Vijayamma Balakrishnan Mullackal	1.33603	
			Total Area	17.0323		

29	Group :	BALALI	S.No	Farmer	Area	AEU
	Group Leader :	FRANCIS A J	1	Shri A J Francis	0.8	13
	Regional Council :	VFPCCK	2	Shri Biju Lukose	1.2	
	Village :	BALAL	3	Shri Joseph	1.2	
	Sub district :	Hosdurg	4	Shri Joseph Pullattu	1.2	
	Block :	NILESHWAR	5	Shri Mathew V U	0.4	
	District :	KASARGOD		Total Area		
Registration NO :	LG0900001373					
30	Group :	BALALI	S.No	Farmer	Area	AEU
	Group Leader :	GEORGE JSEPH	1	Shri Baby Joseph	1.35	13
	Regional Council :	VFPCCK	2	Shri George Joseph	1.2	
	Village :	BALAL	3	Shri Renni George	0.4	
	Sub district :	Hosdurg	4	Shri Sabu Mathew	1.2	
	Block :	KANHANGAD	5	Shri Sebastian	0.8	
	District :	KASARGOD		Total Area	4.95	
Registration NO :	LG0900001445					
31	Group :	BEDADUKAI	S.No	Farmer	Area	AEU
	Group Leader :	MADHAVAN P	1	Shri K Mohanan	0.4	11
	Regional Council :	VFPCCK	2	Shri Madhavan P	0.8	
	Village :	BEDADKA	3	Shri P Padmanabhan	0.6	
	Sub district :	Kasaragod	4	Shri Raghavan Nair T	2.25	
	Block :	KANHANGAD	5	Shri V Kumaran	0.3	
	District :	KASARGOD		Total Area	4.35	
Registration NO :	LG0900001329					
32	Group :	BIO FARM NATURAL IDUKKI	S.No	Farmer	Area	AEU
	Group Leader :	A.J ANDRAYOSE	1	Mr. A.J Andrayose	1	14
	Regional Council :	Biocert International Pvt Ltd., Indore	2	Mr. Abraham Chacko	6	
	Village :	PARATHODU	3	Mr. Aji Antony	7	
	Sub district :	Udumbanchola	4	Mr. Antony Joseph	3	
	Block :	IDUKKI	5	Mr. Babichan Joseph	5	
	District :	IDUKKI	6	Mr. Babu George	4	
	Registration NO :	LG0900001987	7	Mr. Babu Vargees	7	
			8	Mr. Benny Joseph	8	
			9	Mr. Benny P.J	6.5	
			10	Mr. Biju Mathew	2	
			11	Mr. Biju T,K	1	
			12	Mr. Bijumon Joseph	3	
			13	Mr. Binu Joseph	6	
			14	Mr. C.V Thomas	1.5	
			15	Mr. Chacko P.C	2	
		16	Mr. Chackochan	4.5		

			17	Mr. Cheriyan P.C	4	
			18	Mr. E.M Madhusoodhanan	9	
			19	Mr. George Kora	5	
			20	Mr. George Mathew	8	
			21	Mr. George Xavier	6	
			22	Mr. Georgekutty	7	
			23	Mr. James Mathew	5	
			24	Mr. Janardhanan	8	
			25	Mr. Jesol Philip	7	
			26	Mr. John Devasia	6	
			27	Mr. Jolly Joseph	6.5	
			28	Mr. Jose Joseph	5	
			29	Mr. Jose Mathew	12	
			30	Mr. Jose P.T	8	
			31	Mr. Joseph	6	
			32	Mr. Joseph George	6.5	
			33	Mr. Joseph Joseph	7	
			34	Mr. Joseph M.V	5	
			35	Mr. Joseph Varkey	8	
			36	Mr. Josi Joseph	8	
			37	Mr. Joy Eappan	5	
			38	Mr. Joy Paradiyil	10	
			39	Mrs. Babins Alles	3	
			40	Shri Abraham Kuzhikodil	5.5	
			41	Shri Babykutty	6.5	
			42	Shri Benny Vargees	2	
			43	Shri Bijo Thomas	4	
			44	Shri Biju Joseph	5	
			45	Shri Titty Vadakkedath	5	
			46	Shri Tomy Joseph	6	
			47	Shri V.J Raju	5	
			48	Shri V.R Sivankutty	4	
			49	Shri Vargees Joseph	5	
			50	Shri Vargees Vargees	6	
				Total Area	276.5	
33	Group :	BIOGREEN	S.No	Farmer	Area	AEU
	Group Leader :	JOHNY K.V	1	Mr. C C Babu	0.16	12
	Regional Council :	VFPCK	2	Mr. P S Varghese	0.32	
	Village :	MALAYATTOOR	3	Mr. Pappachan .C.P	0.16	
	Sub district :	Aluva	4	Shri Johny	0.2	
	Block :	ANGAMALI	5	Shri M.S.Gopalakrishnan	0.18	
	District :	ERNAKULAM		Total Area	1.02	
	Registration NO :	LG0900003296				

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34	Group :	CHAITHANYA	S.No	Farmer	Area	AEU
	Group Leader :	VINOY PM	1	Miss. V.J Krishnakumari	1.24	21
	Regional Council :	VFPCK	2	Mr. Pc Vargeese	0.4	
	Village :	PURAKKADI	3	Mr. Radhakrishnan	0.2	
	Sub district :	Sulthanbathery	4	Mr. Rajappan	0.66	
	Block :	KALPETTA	5	Mr. Sunil V.R	0.328	
	District :	WAYANAD	6	Shri Biju Nk	0.7	
	Registration NO :	LG0900003418	7	Shri Sreeranjn Tp	0.4	
		8	Shri Vinoy Pm	0.384		
			Total Area	4.312		
35	Group :	CHAITHRAM KONNAKAD	S.No	Farmer	Area	AEU
	Group Leader :	SUNNY THOMAS	1	Shri John.T.T	0.4	13
	Regional Council :	VFPCK	2	Shri Jose Cyriac	0.4	
	Village :	MALOTH	3	Shri Philip.M.T	0.4	
	Sub district :	Hosdurg	4	Shri Sunny Thomas	0.4	
	Block :	KANHANGAD	5	Smt. Selin Sunny	0.2	
	District :	KASARGOD	6	Smt. Shani Jose	0.1	
Registration NO :	LG0900009592		Total Area	1.9		
36	Group :	CHAITHRAM PERIYA	S.No	Farmer	Area	AEU
	Group Leader :	T.PURUSHOTHAMAN	1	Shri M.Raghavan Nair	1	11
	Regional Council :	VFPCK	2	Shri P.Kumaran Nair	2.28	
	Village :	PERIYA	3	Shri P.V.Raghavan	1.5	
	Sub district :	Hosdurg	4	Shri T.Anandan	0.76	
	Block :	KANHANGAD	5	Shri T.Purushothaman	0.7	
	District :	KASARGOD	6	Shri T.T.Kunhiraman	1.5	
Registration NO :	LG0900004545		Total Area	7.74		
37	Group :	CHAMPAKAD	S.No	Farmer	Area	AEU
	Group Leader :	BHAVANI P	1	Shri Bhavani	0.332	11
	Regional Council :	VFPCK	2	Smt. Janaki.P	0.78	
	Village :	BEDADKA	3	Smt. Leela.K	0.8	
	Sub district :	Kasaragod	4	Smt. Radha.P	1	
	Block :	KASARGOD	5	Smt. Thankamani.K	0.7	
	District :	KASARGOD		Total Area	3.612	
Registration NO :	LG0900004747					
38	Group :	CHANNAPETTA	S.No	Farmer	Area	AEU
	Group Leader :	CHANDA PILLAI.K.C	1	Shri Chanda Pillai.K.C	2.5	12
	Regional Council :	VFPCK	2	Shri Joseph.S	0.7	
	Village :	CHANNAPPETTA	3	Shri Mathaikutty	0.48	
	Sub district :	Pathanapuram	4	Shri Raju.K	1	
	Block :	KOTTARAKKARA	5	Shri Suresh Kumar.G	1	
	District :	KOLLAM	6	Shri Thomas George	0.2	
Registration NO :	LG0900001787		Total Area	5.88		

39	Group :	CHANThERA	S.No	Farmer	Area	AEU
	Group Leader :	E.P.JAYASREE	1	Shri Balan.K	0.25	7
	Regional Council :	VFPCCK	2	Shri K.Gopalan	0.25	
	Village :	MANIYAT	3	Shri N.Gopalan	0.25	
	Sub district :	Hosdurg	4	Smt. E.P.Jayasree	0.25	
	Block :	NILESHWAR	5	Smt. K.Sreedharan Komaram	0.25	
	District :	KASARGOD		Total Area	1.25	
Registration NO :	LG0900007324					
40	Group :	CHAVASSERY	S.No	Farmer	Area	AEU
	Group Leader :	MOHANAN P	1	Shri Ashokan K V	0.1	13
	Regional Council :	VFPCCK	2	Shri Balakrishnan K V	0.2	
	Village :	CHAVASSERY	3	Shri Mohanan C.P	0.1	
	Sub district :	Thalassery	4	Shri Mohanan P	0.15	
	Block :	IRITTY	5	Shri Sukumaran K	0.2	
	District :	KANNUR		Total Area	0.75	
Registration NO :	LG0900001822					
41	Group :	CHEMPAKAPARA& BETHEL	S.No	Farmer	Area	AEU
	Group Leader :	ANTONY THOMAS	1	Mr. Abhilash K.Sunu	1	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. Abraham	1	
	Village :	VATHIKUDY	3	Mr. Aju Devassia	1.6	
	Sub district :	Udumbanchola	4	Mr. Anand Joseph	1.2	
	Block :	IDUKKI	5	Mr. Anil Kumar	0.6	
	District :	IDUKKI	6	Mr. Antony K J	0.48	
	Registration NO :	LG0900001121	7	Mr. Antony Thomas	2.4	
			8	Mr. Babu Joseph	0.8	
			9	Mr. Baby Thomas	0.8	
			10	Mr. Baiju Mathew	0.8	
			11	Mr. Baiju V G	1.2	
			12	Mr. Benny E.T.	0.8	
			13	Mr. Benny Mathew	0.8	
			14	Mr. Benny Thomas	0.8	
			15	Mr. Biju P A	2	
			16	Mr. Biju Cherian	1.6	
			17	Mr. Biju P.K.	0.6	
			18	Mr. Bineesh Sebastian	0.8	
			19	Mr. Bineesh P Shyam	0.6	
			20	Mr. Binoy Cherian	1.2	
			21	Mr. Binoy Thomas	0.6	
			22	Mr. Binu V.S.	1.6	
			23	Mr. Chacko Joseph	1.6	
			24	Mr. Chacko Kuriakose	1.2	
		25	Mr. Dani Purushothaman	0.32		

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	26	Mr. Devassia C.D.	1.2	14
	27	Mr. Francis Joseph	0.8	
	28	Mr. George Joseph	1.6	
	29	Mr. George K.J	2	
	30	Mr. Gopalakrishnan	0.6	
	31	Mr. Jacob Devassia	1.6	
	32	Mr. Jiby Mathew	0.6	
	33	Mr. Joice Jacob	1.2	
	34	Mr. Jomon Michayel	0.4	
	35	Mr. Joseph Abraham	1.2	
	36	Mr. Joseph Joseph (Choorakkunnel)	0.8	
	37	Mr. Joseph N.M.	0.8	
	38	Mr. Joshy K.N.	0.6	
	39	Mr. Joy	1.6	
	40	Mr. Joy K.J.	0.8	
	41	Mr. Joy N.G.	1.2	
	42	Mr. Joyan Mathew	0.8	
	43	Mr. Jyothish Mon P.L.	0.8	
	44	Mr. Karunakaran	0.6	
	45	Mr. Kurian Joseph	1.4	
	46	Mr. Kuttappan K.S.	0.6	
	47	Mr. Lousi Joseph	0.6	
	48	Mr. Maju George	0.6	
	49	Mr. Manoj A.J	1.6	
	50	Mr. Manoj P.R.	0.8	
	51	Mr. Mathew Mathai	0.6	
	52	Mr. Mathew Thomas	0.6	
	53	Mr. Noby George	0.8	
	54	Mr. Omanakuttan P G	0.4	
	55	Mr. Paulose	1.6	
	56	Mr. Prasad	0.8	
	57	Mr. Purushothaman	0.6	
	58	Mr. Rajan	1	
	59	Mr. Rajan Ambarajan	0.8	
	60	Mr. Rajesh K S	4	
	61	Mr. Raju Varghese	2	
	62	Mr. Reji Pappachan	0.72	
	63	Mr. Rendeep	1.2	
	64	Mr. Robin John	0.8	
	65	Mr. Roshin John	1.2	
	66	Mr. Royichan N.J.	0.8	
	67	Mr. Sabu A.K.	0.4	

	68	Mr. Sabu E.V.	0.8	14
	69	Mr. Sabu Joseph	0.8	
	70	Mr. Sajan Thomas	2	
	71	Mr. Sajimon P.J	0.8	
	72	Mr. Santhosh E S	2.4	
	73	Mr. Saradakunju	0.2	
	74	Mr. Sasi Er	1.2	
	75	Mr. Sebastian Joseph	2.4	
	76	Mr. Sebastian K M	1.08	
	77	Mr. Shaji C.M	0.24	
	78	Mr. Shaji Dominic	1.6	
	79	Mr. Shaji T.C.	0.46	
	80	Mr. Sherly John	0.4	
	81	Mr. Shibu K.N.	0.8	
	82	Mr. Shibu Thomas	0.8	
	83	Mr. Shijo Mathew	1.6	
	84	Mr. Shiju N.B.	0.8	
	85	Mr. Shinu Joseph	1.2	
	86	Mr. Shybu Devassia	0.8	
	87	Mr. Siby E.V.	0.8	
	88	Mr. Sibychan Kurian	1.4	
	89	Mr. Sijo Thomas	1	
	90	Mr. Sindhu Janardhanan	0.4	
	91	Mr. Sojan Joseph	0.8	
	92	Mr. Subhash.T.P.	1	
	93	Mr. Sudhakaran Sukumaran	1.2	
	94	Mr. Sunil M S	1.4	
	95	Mr. Sunny George	1	
	96	Mr. Sunny Varghese	0.8	
	97	Mr. Surendran V.T.	0.6	
	98	Mr. Suresh V.P.	3.2	
	99	Mr. Sureshm	1.2	
	100	Mr. Suseelan Sukumaran	0.8	
	101	Mr. Thankappan Gopalan	0.8	
	102	Mr. Thomas Antony	0.8	
	103	Mr. Thomas Chacko	0.8	
	104	Mr. Thomas Joseph	0.8	
	105	Mr. Thomas Mathew	0.8	
	106	Mr. Thomas Thomas	0.8	
	107	Mr. Thomas Thomas	1.6	
	108	Mr. Tomy Sebastian	0.4	
	109	Mr. Tony Joseph	1.4	

	110	Mr. Vargheset.M.	2	
	111	Mr. Vasudevan P.N.	1.1	14
	112	Mr. Vavachan Mathew	1.8	
	113	Mrs. Aleykutty Scaria	0.6	
	114	Mrs. Alice	1.2	
	115	Mrs. Ammini Chandran	1.5	
	116	Mrs. Ancy Baby	0.6	
	117	Mrs. Anitha Rajesh	0.4	
	118	Mrs. Annamma Chacko	1	
	119	Mrs. Annamma Cheriyan	0.4	
	120	Mrs. Annamma Mathew	0.4	
	121	Mrs. Asmin Santhosh	0.4	
	122	Mrs. Biji Biju	1.6	
	123	Mrs. Daisy Raju	0.4	
	124	Mrs. Devaki Janardhanan	1	
	125	Mrs. Elsy Joseph	0.8	
	126	Mrs. Indu Sivadasan	0.8	
	127	Mrs. Jency Jose	0.8	
	128	Mrs. Jessy Michael	0.4	
	129	Mrs. Jolly Francis	0.8	
	130	Mrs. Kuttiyamma Mathew	0.8	
	131	Mrs. Kuttiyamma Thomas	0.6	
	132	Mrs. Laly Abraham	0.8	
	133	Mrs. Lissy Chacko	0.6	
	134	Mrs. Lissy Manoj	0.8	
	135	Mrs. Lissy Raju	0.6	
	136	Mrs. Mariyakkutty Daniel	0.8	
	137	Mrs. Mariyamma	0.8	
	138	Mrs. Marykkutty	1	
	139	Mrs. Mercy Benny	0.4	
	140	Mrs. Mini Sabu	0.8	
	141	Mrs. Nooby Binu	0.6	
	142	Mrs. Pushpa Ramankutty	1	
	143	Mrs. Rajani Suresh	0.4	
	144	Mrs. Rani Thomas	0.8	
	145	Mrs. Rosilyjoseph	0.8	
	146	Mrs. Salby	0.4	
	147	Mrs. Sali Reji	1.2	
	148	Mrs. Santy Thomas	0.88	
	149	Mrs. Selin Raju	1.2	
	150	Mrs. Sherlin George	0.8	
	151	Mrs. Shiju Thomas	1.6	
	152	Mrs. Shijy Reji	0.4	

		153	Mrs. Sini Saji	0.8	14
		154	Mrs. Sini Surendran	0.4	
		155	Mrs. Sobhana Ponnappan	0.4	
		156	Mrs. Sreeji Manoj	1	
		157	Mrs. Sudharma	0.8	
		158	Mrs. Sunitha Das	0.8	
		159	Mrs. Thankamma Kuttappayi	0.6	
		160	Smt. Bhavani Jose	0.4	
		161	Smt. Leelamma Sibi	0.8	
			Total Area	155.78	
42	Group : CHENGAMANAD	S.No	Farmer	Area	AEU
	Group Leader : RADHAKRISHNA PILLAI	1	Shri Geevarghese.L	2	12
	Regional Council : VFPCCK	2	Shri James.K.L	0.5	
	Village : MELILA	3	Shri Radhakrishna Pillai	0.5	
	Sub district : Kottarakkara	4	Shri Sreedharan Nair	1	
	Block : KOTTARAKKARA	5	Shri Sreekumar	0.24	
	District : KOLLAM		Total Area	4.24	
	Registration NO : LG0900001807				
43	Group : CHERIYANAD	S.No	Farmer	Area	AEU
	Group Leader : KN SASI	1	Mr. Abraham Kurian	0.1	9
	Regional Council : VFPCCK	2	Mr. Biju	0.1	
	Village : CHERIYANAD	3	Mr. Prasad	0.1	
	Sub district : Chengannur	4	Mr. Somashekar	0.08	
	Block : CHENGANNUR	5	Shri Kn Sasi	0.12	
	District : ALAPPUZHA		Total Area	0.5	
	Registration NO : LG0900002243				
44	Group : CHEROOPPA PUNCHAPPADAM	S.No	Farmer	Area	AEU
	Group Leader : K.P. SREEDHARAN	1	Shri K.P. Sreedharan	0.12	11
	Regional Council : VFPCCK	2	Shri N.P. Unnirajan	0.08	
	Village : MAVOOR	3	Shri Subrahmanyam	0.32	
	Sub district : Kozhikode	4	Shri Surendran	0.08	
	Block : KUNNAMANGALAM	5	Smt. Radha. P	0.1	
	District : KOZHIKODE	6	Smt. Sanila Rajesh	0.24	
	Registration NO : LG0900013078		Total Area	0.94	
45	Group : CHERTHALA	S.No	Farmer	Area	AEU
	Group Leader : PRAKASHAN K	1	Mr. Kamalasanan	0.392	1
	Regional Council : VFPCCK	2	Mr. Km Emmanuval	0.2	
	Village : KADAKKARAPPALLY	3	Mr. Kochukuttan	0.1	
	Sub district : Cherthala	4	Mr. Pp Prasad	0.28	
	Block : KANJIKKUZHY	5	Mr. Sabastian	0.1	
	District : ALAPPUZHA	6	Mr. Sathyaraj	0.2	

	Registration NO : LG0900002073	7	Mr. Tk Gopi	0.12	1
		8	Mr. Vm Kunjukunju	0.32	
		9	Shri Prakashan	1.2	
			Total Area	2.912	
46	Group : CHERUVADI	S.No	Farmer	Area	AEU
	Group Leader : MUHAMMED ABDUNAJEEB	1	Shri Abdul Hakeem	0.5	11
	Regional Council : VFPCCK	2	Shri Aboobacker E P	0.2	
	Village : KODIYATHUR	3	Shri Beeran Kutty	0.25	
	Sub district : Kozhikode	4	Shri Imbichali	0.25	
	Block : KOZHIKODE	5	Shri Muhammed	0.1	
	District : KOZHIKODE		Total Area	1.3	
	Registration NO : LG0900011275				
47	Group : CHERUVANCHERY	S.No	Farmer	Area	AEU
	Group Leader : VASU K	1	Shri Ashokan	0.24	11
	Regional Council : VFPCCK	2	Shri Balan M	0.22	
	Village : CHERUVANCHERY	3	Shri Jireshan	0.4	
	Sub district : Thalassery	4	Shri Ratheeshan K	0.2	
	Block : KUTHUPARAMBA	5	Shri Vasu K	0.22	
	District : KANNUR		Total Area	1.28	
	Registration NO : LG0900001917				
48	Group : CHUNGAKUNNU	S.No	Farmer	Area	AEU
	Group Leader : SONY MATHEW	1	Shri Benny T J	0.2	15
	Regional Council : VFPCCK	2	Shri Biju Paul	1	
	Village : KELAKAM	3	Shri Eliyas	0.2	
	Sub district : Thalassery	4	Shri Mathew Tm	0.9	
	Block : PERAVOOR	5	Shri Sony Mathew	0.8	
	District : KANNUR		Total Area	3.1	
	Registration NO : LG0900003722				
49	Group : CLAYDAM	S.No	Farmer	Area	AEU
	Group Leader : RADAKRISHNAN NAIR	1	Mr. Anilkumar Mv	0.8	4
	Regional Council : VFPCCK	2	Mr. Mathai Vargees	0.6	
	Village : PANDANAD	3	Mr. Mj Anilkumar	0.4	
	Sub district : Chengannur	4	Mr. Radakrishnan	0.4	
	Block : CHENGANNUR	5	Mr. Tp Ramanujan	0.1	
	District : ALAPPUZHA		Total Area	2.3	
	Registration NO : LG0900002737				

50	Group :	DEEPA KADAVATHUMUNDA	S.No	Farmer	Area	AEU
	Group Leader :	ROBIN MATHEW	1	Shri Anilkumar.C	0.2	13
	Regional Council :	VFPCCK	2	Shri Biju.N	0.2	
	Village :	MALOTH	3	Shri Chandravathi.T	0.2	
	Sub district :	Hosdurg	4	Shri Joseph.K.J	0.2	
	Block :	KANHANGAD	5	Shri Krishnamma	0.2	
	District :	KASARGOD	6	Shri Robin Mathew	0.4	
	Registration NO :	LG0900009663	7	Smt. Beena Robin	0.2	
			8	Smt. Omana	0.2	
			Total Area	1.8		
51	Group :	DEEPAMMELECHINNA R1	S.No	Farmer	Area	AEU
	Group Leader :	MAJU GEORGE	1	Mr. Benny Thomas	0.2	14
	Regional Council :	VFPCCK	2	Mr. Biju Joseph		
	Village :	VATHIKUDY	3	Mr. Jibi Manuel	0.4	
	Sub district :	Udumbanchola	4	Mr. Maju George	0.12	
	Block :	IDUKKI	5	Mr. Raju Varghese	0.8	
	District :	IDUKKI	6	Mr. Randeep Abraham	0.3	
	Registration NO :	LG0900003507	7	Mr. Shybu Devasia	1.12	
				Total Area	4.04	
52	Group :	DEEPAMMELECHINNA R2	S.No	Farmer	Area	
	Group Leader :	JOY K J	1	Mr. Antony Thomas	1.6	14
	Regional Council :	VFPCCK	2	Mr. Joshy K N	0.2	
	Village :	VATHIKUDY	3	Mr. Joy K J	0.2	
	Sub district :	Udumbanchola	4	Mr. Purushothamman	0.2	
	Block :	IDUKKI	5	Mr. Shaji T C	0.24	
	District :	IDUKKI	6	Mr. Shibu K N	0.2	
	Registration NO :	LG0900003997	7	Mr. Subash T P	0.4	
				Total Area	3.04	
53	Group :	DHAWNI	S.No	Farmer	Area	
	Group Leader :	K.P JAYACHANDRAN	1	Mr. James P.A	0.8	20
	Regional Council :	VFPCCK	2	Mr. Jomon Joseph	2	
	Village :	MUPPAINAD	3	Mr. K.V Sabastian	0.382	
	Sub district :	Vythiri	4	Mr. M.T Vargeese	0.6	
	Block :	KALPETTA	5	Mr. P.T Youganan	0.832	
	District :	WAYANAD	6	Mr. Shijoy	0.1	
	Registration NO :	LG0900004379	7	Mr. T.M Mathew	0.9	
			8	Shri K.P Jayachandran	0.6	
			Total Area	6.214		

54	Group :	EDAKKARA	S.No	Farmer	Area	AEU
	Group Leader :	SREEJITH. A	1	Shri Babu K.K.	0.1	11
	Regional Council :	VFPCCK	2	Shri Manoj Kumar	0.2	
	Village :	THALAKKULATHUR	3	Shri Sreejith. A	0.1	
	Sub district :	Kozhikode	4	Shri Sureshkumar M.C.	0.2	
	Block :	CHELANNUR	5	Smt. Anitha	0.1	
	District :	KOZHIKODE		Total Area	0.7	
	Registration NO :	LG0900001741				
55	Group :	EDAVARAD	S.No	Farmer	Area	AEU
	Group Leader :	HAMEED	1	Shri Azeez	0.4	11
	Regional Council :	VFPCCK	2	Shri Hameed	1	
	Village :	ERAVATTUR	3	Shri Majeed. A	1	
	Sub district :	Quilandy	4	Shri N. Padmajan	0.64	
	Block :	PERAMBRA	5	Shri Sajith Kumar. A	0.4	
	District :	KOZHIKODE		Total Area	3.44	
	Registration NO :	LG0900011339				
56	Group :	ELEVANCHERRY	S.No	Farmer	Area	AEU
	Group Leader :	UNNIKRISHNAN	1	Mr. Babu.M	0.4	22
	Regional Council :	VFPCCK	2	Mr. Manikandan.A	0.4	
	Village :	ELAVANCHERRY	3	Mr. Unnikrishnan.K	0.8	
	Sub district :	Chittur	4	Mr. Vijaya Kumar	0.5	
	Block :	NEMMARA	5	Mr. Vijayan.A.V	0.4	
	District :	PALAKKAD		Total Area	2.5	
	Registration NO :	LG0900001789				
57	Group :	ELEVANCHERRY2	S.No	Farmer	Area	AEU
	Group Leader :	PADMANABHAN.R	1	Mr. K.G.Purushothaman	0.4	22
	Regional Council :	VFPCCK	2	Mr. Kannadasan	0.2	
	Village :	ELAVANCHERRY	3	Mr. Mani.R	0.1	
	Sub district :	Chittur	4	Mr. Mohanan.M.S	0.32	
	Block :	NEMMARA	5	Mr. P.C.Mani	0.5	
	District :	PALAKKAD	6	Mr. Prasad.P.V	0.4	
	Registration NO :	LG0900001855	7	Mr. Subramanian	0.2	
			8	Shri Padmanabhan.R	0.4	
			Total Area	2.52		
58	Group :	ELEVANCHERRY3	S.No	Farmer	Area	AEU
	Group Leader :	BALAN P K	1	Mr. Devadasan.M	0.4	22
	Regional Council :	VFPCCK	2	Mr. K.M.Rajan	0.2	
	Village :	ELAVANCHERRY	3	Mr. Madhusoodhanan.K	0.4	
	Sub district :	Chittur	4	Mr. Padmanabhan.G	0.4	
	Block :	NEMMARA	5	Mr. Parameswaran.P.K	0.4	
	District :	PALAKKAD	6	Mr. Radhakrishnan.T.V	0.2	
	Registration NO :	LG0900002350	7	Mr. Vellingiri	0.3	
			8	Shri Balan P	0.2	
			Total Area	2.5		

59	Group :	EVEGREEN	S.No	Farmer	Area	AEU
	Group Leader :	K A DEVASIA	1	Shri Augustine Thomas	0.4	14
	Regional Council :	VFPCK	2	Shri Eppan Yohannan	1.2	
	Village :	KANJIKUZH	3	Shri Francis	0.4	
	Sub district :	Thodupuzha	4	Shri Joseph Avira	0.4	
	Block :	IDUKKI	5	Shri K A Devasia	0.4	
	District :	IDUKKI	6	Shri Pratheesh Kuriakose	0.1	
	Registration NO :	LG0900001620	7	Shri Rajendran	0.4	
			8	Shri Sudhakaran	0.8	
			Total Area	4.1		
60	Group :	EVERGREEN	S.No	Farmer	Area	AEU
	Group Leader :	ABDUL HAMEED	1	Mr. Abdhul	0.352	21
	Regional Council :	VFPCK	2	Mr. C.Paidhal	0.4	
	Village :	CHEERAL	3	Mr. Devayani	0.7	
	Sub district :	Sulthanbathery	4	Mr. K.Achudhan	0.24	
	Block :	SULTHAN BATHERY	5	Mr. K.K Padmanabhan	0.24	
	District :	WAYANAD	6	Mr. Poullose	0.356	
	Registration NO :	LG0900002354	7	Mr. Sumodhan	0.4	
			8	Mr. Vijayan	0.76	
		9	Shri Abdul Hameed	0.352		
			Total Area	3.8		
61	Group :	EVERGREEN WEST-ELLERI	S.No	Farmer	Area	AEU
	Group Leader :	THOMAS VADAKKATH	1	Shri Benny Francis	0.8	15
	Regional Council :	VFPCK	2	Shri Francis.V.C	2.25	
	Village :	WEST ELERI	3	Shri Jacob.N.J	2.5	
	Sub district :	Hosdurg	4	Shri Joseph.P.J	1.8	
	Block :	KANHANGAD	5	Shri Thomas Vadakkath	1	
	District :	KASARGOD	6	Shri Thomas.P.T	2.49	
Registration NO :	LG0900004908		Total Area	10.84		
62	Group :	EYYAKKAD	S.No	Farmer	Area	AEU
	Group Leader :	V.KOMAN	1	Shri C.H.Krishnan	0.332	7
	Regional Council :	VFPCK	2	Shri K.V.Radhakrishnan	0.12	
	Village :	PILICODE	3	Shri M.Chathukutty	0.5	
	Sub district :	Hosdurg	4	Shri M.Raveendran	0.35	
	Block :	NILESHWAR	5	Shri P.P.Kunhiraman	0.18	
	District :	KASARGOD	6	Shri P.Sasidharan	0.152	
	Registration NO :	LG0900006334	7	Shri R.Balakrishnan	0.3	
			8	Shri Raghavan.A	0.33	
			9	Shri V.Koman	0.36	
		10	Smt. Valsala Bhaskaran	1.16		
			Total Area	3.784		

63	Group :	GANGA	S.No	Farmer	Area	AEU
	Group Leader :	ANANDHAN S. N	1	Shri Anandhan S. N	0.1	9
	Regional Council :	VFPCCK	2	Shri Appukuttan Nair. N	0.68	
	Village :	KULANADA	3	Shri Chandy Abraham	0.4	
	Sub district :	Kozhenchery	4	Shri Mohanan Pillai	0.4	
	Block :	PANDLAM	5	Shri Muralidharan Pillai	0.452	
	District :	PATHANAMTHITTA	6	Shri Vijayan P. D	0.4	
	Registration NO :	LG0900001863		Total Area	2.432	
64	Group :	GREEN LAND	S.No	Farmer	Area	
	Group Leader :	SKARIYA C.J	1	Mr. Baby Vargeese	0.884	15
	Regional Council :	VFPCCK	2	Mr. Chariyan	1.2	
	Village :	PERIYA	3	Mr. Ealiyas Np	0.66	
	Sub district :	Mananthavady	4	Mr. Ealliyas	0.44	
	Block :	MANANTHAVADY	5	Mr. Jiji Joseph	0.4	
	District :	WAYANAD	6	Mr. K.K Yakobe	0.08	
	Registration NO :	LG0900002829	7	Mr. Poul N Jorge	0.8	
			8	Mr. Tome Joseph	0.7	
			9	Mr. Tommy P.V	0.42	
			10	Shri Skariya C.J	0.3	
			Total Area	5.884		
65	Group :	GREEN VALLY MULLANKOLLY	S.No	Farmer	Area	AEU
	Group Leader :	SUNNY	1	Shri Baby Mathew Kunnumpurath	1.11	21
	Regional Council :	Wayanad Social Service Society	2	Shri Devasia Arackal	1.52	
	Village :	PULPALLI	3	Shri Jophin Kalapuraputhenpura	1.5	
	Sub district :	Sulthanbathery	4	Shri Jose A V Arackal	2.02	
	Block :	SULTHAN BATHERY	5	Shri Joseph K M Kunnumpurath	1.11	
	District :	WAYANAD	6	Shri Joseph Kannamthanathu(Secretary)	0.32	
	Registration NO :	LG0900001194	7	Shri Joseph Karangattu	0.81	
			8	Shri Sunny Kurian Karuthedath(President)	1.62	
			Total Area	10.02		
66	Group :	GREENCARE	S.No	Farmer	Area	AEU
	Group Leader :	SHAJI A.C	1	Shri Anil Kumar N.K	0.2	20
	Regional Council :	VFPCCK	2	Shri Anilkumar P T	0.2	
	Village :	PANAMARAM	3	Shri C.T Rajendran	0.4	
	Sub district :	Mananthavady	4	Shri Rajan C.K	0.3	
	Block :	MANANTHAVADY	5	Shri Shaji A.C	0.2	
	District :	WAYANAD		Total Area	1.3	
Registration NO :	LG0900002237					

67	Group :	GREENS ALATHOOR	S.No	Farmer	Area	AEU
	Group Leader :	RAJU	1	Shri Baby Poovathottathil	3.24	21
	Regional Council :	Wayanad Social Service Society	2	Shri Benny V C Vennampadathil	0.73	
	Village :	PULPALLI	3	Shri Jaison Kulakkattil	2.02	
	Sub district :	Sulthanbathery	4	Shri Jose Kuriakosemeyickal	1.21	
	Block :	SULTHAN BATHERY	5	Shri Joseph Kureekattil	0.89	
	District :	WAYANAD	6	Shri Mathew Thaikoottathil	1.01	
	Registration NO :	LG0900001201	7	Shri Onachan Parackal	0.36	
			8	Shri Pathrose Vadakkekannamangalath	0.44	
			9	Shri Raju Puthuparambil	0.61	
			10	Shri Saji Panachakathil	1.21	
			11	Shri Sherly Sunny Kulakkattil	1.62	
			12	Shri Siju K C Kulakkattil	2.02	
			13	Shri Thomas Kulakkattil	1.62	
			14	Smt. Alice	1.21	
			Total Area	18.21		
68	Group :	GREENSTAR RAVANESHWARAM	S.No	Farmer	Area	AEU
	Group Leader :	K.KUNHIKRISHNAN NAMBIAR	1	Shri K.Kunhikrishnan Nambiar	0.62	2
	Regional Council :	VFPCCK	2	Shri K.V.Narayanan	1.5	
	Village :	AJANUR	3	Shri Raghavan.K.V	1.5	
	Sub district :	Hosdurg	4	Shri Rajan Kuzhinhadi	0.46	
	Block :	KANHANGAD	5	Smt. Bhanumathi.V.K	0.2	
	District :	KASARGOD	6	Smt. Karthyayani.K	0.2	
Registration NO :	LG0900005230		Total Area	4.48		
69	Group :	GREENVALLY CLUBPALAKOLLY	S.No	Farmer	Area	AEU
	Group Leader :	JOHNY	1	Shri Aji Chacko Kottarakunnil(Secretary)	1.72	21
	Regional Council :	Wayanad Social Service Society	2	Shri Augustine Pallitharayil	2.37	
	Village :	PULPALLI	3	Shri Baby Thomas Chembananickal	0.81	
	Sub district :	Sulthanbathery	4	Shri Emmanuel Akkanthiriyil	0.81	
	Block :	SULTHAN BATHERY	5	Shri Johny D Kanjirathinkal (President)	1.62	
	District :	WAYANAD	6	Shri Joseph A V Akkanthiriyil	0.57	
	Registration NO :	LG0900001196	7	Shri Saji Joseph Kollarath	0.2	
			8	Shri Thomas Thekkanattu	1.82	
			9	Shri Tomy C P Chalackal	0.81	
			10	Shri Tomy Varghese Akkanthiriyil	0.81	
			11	Smt. Laisamma Thomas Thekkanattu	0.89	
			Total Area	12.43		

70	Group :	GREENWAY KONNAKAD	S.No	Farmer	Area	AEU
	Group Leader :	SUNNY CHERIYAN	1	Shri Antony Poovakulam	0.4	11
	Regional Council :	VFPCK	2	Shri Sherley Antony	0.4	
	Village :	MALOTH	3	Shri Sunny Cheriyan	0.4	
	Sub district :	Hosdurg	4	Shri Suresh.M.G	0.1	
	Block :	KANHANGAD	5	Smt. Mary Sunny	0.4	
	District :	KASARGOD	6	Smt. Sheela Prabhakaran	0.2	
	Registration NO :	LG0900009585		Total Area	1.9	
71	Group :	HARISREE	S.No	Farmer	Area	
	Group Leader :	K A THOMAS	1	Mr. K A Thomas	0.1	4
	Regional Council :	VFPCK	2	Shri Abraham	0.1	
	Village :	NIRANAM	3	Shri Anirudhhan N S	0.1	
	Sub district :	Thiruvalla	4	Shri Boby Varghese	0.1	
	Block :	PULIKEEZHU	5	Shri Haridas K	0.1	
	District :	PATHANAMTHITTA	6	Shri Mathew Peter	0.1	
	Registration NO :	LG0900006019		Total Area	0.6	
72	Group :	HARITH BHOOMI	S.No	Farmer	Area	
	Group Leader :	O.V HARINDHRAN	1	Mr. Ag Jorge	0.4	20
	Regional Council :	VFPCK	2	Mr. Babua.G	1	
	Village :	PANAMARAM	3	Mr. Binu Ag	0.8	
	Sub district :	Mananthavady	4	Mr. Gobikumar Cm	1	
	Block :	MANANTHAVADY	5	Mr. K.P Juddy	0.44	
	District :	WAYANAD	6	Mr. Narayanan Nambyar	0.8	
	Registration NO :	LG0900003319	7	Shri O.V Harindhran	1.6	
			Total Area	6.04		
73	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	ALEXANDER ANTONY	1	Mr. Alexander Antony	0.4	4
	Regional Council :	VFPCK	2	Mr. Jorge Abraham	0.2	
	Village :	MUTTAR	3	Mr. Josaph Antony	1	
	Sub district :	Kuttanad	4	Mr. Ouseppachan	0.2	
	Block :	VELIYANAD	5	Mr. Sebastian Josaph	1.6	
	District :	ALAPPUZHA		Total Area	3.4	
	Registration NO :	LG0900003329				
74	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	T.K RADHAKRISHNAN	1	Mr. Kesavan	0.8	21
	Regional Council :	VFPCK	2	Mr. T.N Kutty	0.8	
	Village :	CHEERAL	3	Mr. Vinodhe	0.52	
	Sub district :	Sulthanbathery	4	Shri T.K Radhakrishnan Nair	0.28	
	Block :	SULTHAN BATHERY	5	Smt. Eallyamma	0.4	
	District :	WAYANAD	6	Smt. Nandhini	0.2	
	Registration NO :	LG0900002738	7	Smt. Vinodhini.P	0.4	
			Total Area	3.4		

75	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	JAYARAMAN D	1	Mr. Jayaraman	0.52	1
	Regional Council :	VFPCCK	2	Mr. Stalin V S	1.2	
	Village :	PATTANAKKAD	3	Mrs. Shakeela	0.2	
	Sub district :	Cherthala	4	Mrs. Shantha	0.18	
	Block :	PATTANAKKAD	5	Mrs. Vv Ajitha	0.8	
	District :	ALAPPUZHA		Total Area	2.9	
Registration NO :	LG0900004045					
76	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	AG SREEKUMAR	1	Mr. Ag Sreekumar	0.2	9
	Regional Council :	VFPCCK	2	Mr. Koshy	0.8	
	Village :	VENMONY	3	Mr. Mathew Idikula	0.2	
	Sub district :	Chengannur	4	Mr. Sajikumar	0.1	
	Block :	CHENGANNUR	5	Mr. Va Hussein	0.2	
	District :	ALAPPUZHA		Total Area	1.5	
Registration NO :	LG0900002362					
77	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	SARASAN E. K	1	Shri Aniyankunju	0.2	9
	Regional Council :	VFPCCK	2	Shri Bharathan. G	0.2	
	Village :	ENATHU	3	Shri Chellappakurup	0.2	
	Sub district :	Adoor	4	Shri Rajashekharan Pillai. K	0.2	
	Block :	PARAKODE	5	Shri Sarasan E. K	0.2	
	District :	PATHANAMTHITTA		Total Area	1	
Registration NO :	LG0900002178					
78	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	VASUDEVAN	1	Mr. Muhammed Ashraf	0.8	11
	Regional Council :	VFPCCK	2	Mr. P D Thomas	0.8	
	Village :	MELATTUR	3	Mr. Ramachandran	0.352	
	Sub district :	Perinthalmanna	4	Mr. Raveendra Nathan	1	
	Block :	PERINTHALMANNA	5	Mr. Soolapani Pv	1.508	
	District :	MALAPPURAM	6	Mr. Vasudevan	0.8	
Registration NO :	LG0900002072	7	Smt. Saramma Ep	0.12		
			Total Area	5.38		
79	Group :	HARITHA	S.No	Farmer	Area	AEU
	Group Leader :	N. VIJAYAN PILLAI	1	Shri Ampy M. K	0.1	12
	Regional Council :	VFPCCK	2	Shri Jayachandran K. N	0.28	
	Village :	KALANJOOR	3	Shri N. Vijayan	0.24	
	Sub district :	Adoor	4	Shri S. Rajan	0.1	
	Block :	PARAKODE	5	Shri Thulasidhara Panicker	0.28	
	District :	PATHANAMTHITTA	6	Smt. Sarasakshamma	0.4	
Registration NO :	LG0900001854		Total Area	1.404		

80	Group :	HARITHA	S.No	Farmer	Area	AEU No.
	Group Leader :	ABDUL RAHIM	1	Mr. Antony.P.A	0.052	8
	Regional Council :	Thanal	2	Mr. Babychan	0.022	
	Village :	VENGANOOR	3	Mr. James.O	0.04	
	Sub district :	Thiruvananthapuram	4	Mr. P.M.Baby	0.024	
	Block :	ATHIYANNOOR	5	Mr. Sabu	0.032	
	District :	TRIVANDRUM		Total Area	0.17	
Registration NO :	LG0900001753					
81	Group :	HARITHA BEDADUKA	S.No	Farmer	Area	AEU
	Group Leader :	RAGHUNATHAN.M	1	Shri K.Kunhikannan Nair	0.4	11
	Regional Council :	VFPCK	2	Shri K.Muralidharan	3	
	Village :	BEDADKA	3	Shri Latheef.S.K	0.6	
	Sub district :	Kasaragod	4	Shri Madhusoodhanan.M	1.3	
	Block :	KASARGOD	5	Shri Raghunathan.M	0.57	
	District :	KASARGOD	6	Shri Suresh.P.G	3.19	
Registration NO :	LG0900004950	7	Shri T.Kunhikannan	2.5		
			Total Area	11.56		
82	Group :	HARITHA GEHAM	S.No	Farmer	Area	AEU
	Group Leader :	RAMAN KUTTY	1	Miss. Sheeba C	0.1	11
	Regional Council :	VFPCK	2	Mr. Abdurahiman	0.4	
	Village :	ELAMKULAM	3	Mr. Assainar Mp	0.1	
	Sub district :	Perinthalmanna	4	Mr. Ayoob Ap	0.1	
	Block :	PERINTHALMANNA	5	Mr. Gopalakrishnan	0.1	
	District :	MALAPPURAM	6	Mr. Gopalan	0.12	
	Registration NO :	LG0900002568	7	Mr. Krishnan Namboothiri	0.628	
			8	Mr. Muhammed Pp	0.2	
			9	Mr. Rajesh M	0.1	
			10	Mr. Ramachandran T	0.1	
			11	Mr. Raman Kutty	0.46	
		12	Mrs. Safiya	0.2		
			Total Area	2.608		
83	Group :	HARITHA PRABHA	S.No	Farmer	Area	AEU
	Group Leader :	VIJAYAKUMAR.M	1	Mr. Babu P	0.1	15
	Regional Council :	VFPCK	2	Mr. Balakrishnan M. K	0.24	
	Village :	PADINHARETHARA	3	Mr. Kallu .M	0.2	
	Sub district :	Vythiri	4	Mr. Pradeebekumar.M	0.2	
	Block :	KALPETTA	5	Mr. R.Santhosh	0.12	
	District :	WAYANAD	6	Mr. Sankaran.K	0.1	
	Registration NO :	LG0900003323	7	Mr. Vijayakumar	0.2	
		8	Shri Vijayakumar.M	0.1		
			Total Area	1.26		

84	Group :	HARITHA VARNAM	S.No	Farmer	Area	AEU
	Group Leader :	PRAKASHAN K	1	Mr. Phalgunan	0.24	1
	Regional Council :	VFPCK	2	Mr. Pp Prasad	0.4	
	Village :	KADAKKARAPPALLY	3	Mr. Prakashan	0.4	
	Sub district :	Cherthala	4	Mr. Vm Kunjukunju	0.32	
	Block :	KANJIKKUZHY	5	Mrs. Elsy George	0.1	
	District :	ALAPPUZHA	6	Smt. Mery Margrate	0.6	
	Registration NO :	LG0900003125	7	Smt. Moly Roy	0	
			Total Area	2.1		
85	Group :	HARITHA VELIYAMBAM	S.No	Farmer	Area	AEU
	Group Leader :	THANKACHAN	1	Shri Joseph Maliyeckal	0.51	21
	Regional Council :	Wayanad Social Service Society	2	Shri Baby(Paul) Kochupurackal	0.4	
	Village :	PULPALLI	3	Shri Chacko Kolavelil	0.4	
	Sub district :	Sulthanbathery	4	Shri George E.V Parambath	0.32	
	Block :	SULTHAN BATHERY	5	Shri Saji Kothavazhikkal	0.2	
	District :	WAYANAD	6	Shri Subramanian Alumpura	0.24	
	Registration NO :	LG0900001200	7	Shri Thankachan Kochupurackal	0.49	
			8	Shri Thankappan Achilamkunnel	0.49	
			9	Smt. Mary Kothavazhikkal	0.14	
			10	Smt. Rosamma Kothavazhikkal	0.38	
			Total Area	3.58		
86	Group :	HARITHA WAYANAD	S.No	Farmer	Area	AEU
	Group Leader :	DEVASSIA	1	Shri Babu M A Mukalel	0.81	21
	Regional Council :	Wayanad Social Service Society	2	Shri Deedhiharan N R Naduparampil	1.01	
	Village :	POOTHADI	3	Shri Devasia Ambarayil	2.43	
	Sub district :	Sulthanbathery	4	Shri Devasia Vengathadathil	0.81	
	Block :	SULTHAN BATHERY	5	Shri Joseph Aakkamattathil	0.81	
	District :	WAYANAD	6	Shri Kunjumon K K Kattukudyil	1.05	
	Registration NO :	LG0900001181	7	Shri Ravi K K Kattukudyil	0.2	
			8	Shri Shaji [Gheorge] Ambarayil	1.01	
			9	Shri Shine Puthukkatt	1.01	
			Total Area	9.15		
87	Group :	HARITHA WAYANAD	S.No	Farmer	Area	AEU
	Group Leader :	AJAY KUMAR	1	Shri Ajay Kumar Viswamandiram(Secretary)	1.01	21
	Regional Council :	Wayanad Social Service Society	2	Shri Rajagopalan Vilangadi	0.24	
Village :	PULPALLI	3	Shri Ramakrishnan Valiyairadi	0.24		

	Sub district : Sulthanbathery	4	Shri Ramakrishnan Veeradi	2.35	21	
	Block : SULTHAN BATHERY	5	Shri Ravi Moolavayal	2.49		
	District : WAYANAD	6	Shri Subramanian Kalathil	0.24		
	Registration NO : LG0900001185	7	Shri Thimmappan A S Moolavayal	0.97		
		8	Shri Thimmappan Puthampurakattakandi	0.4		
		9	Shri Thimmappan Veeradi	1.11		
		10	Shri Vellu Sujamandiram	1.07		
		11	Shri Viswanadhan K N Kavickal(President)	1.42		
		12	Smt. Sarala Devi Kattakandi	0.2		
			Total Area	11.76		
88	Group : HARITHAM	S.No	Farmer	Area		AEU
	Group Leader : VENUGOPAL A P	1	Mr. C M Hameed	0.2		5
	Regional Council : VFPCCK	2	Mr. Hameed H	0.2		
	Village : PUTHENVELIKKARA	3	Mr. Jibi Joseph	0.4		
	Sub district : Paravur	4	Mr. Mohammed Moopan	0.3		
	Block : PARAKKADAV	5	Mr. P G John	0.2		
	District : ERNAKULAM	6	Mr. Rajappan T G	0.2		
	Registration NO : LG0900003455	7	Mr. Saji T.M	0.1		
		8	Mr. Sebastian M.A	0.1		
		9	Mr. Shibu.C.J.	0.4		
		10	Mr. T C Avaraachan	0.48		
		11	Mr. Thomas K.V	0.2		
		12	Mr. Venugopal A	0.2		
			Total Area	2.98		
89	Group : HARITHAM MANJUCHAL	S.No	Farmer	Area	AEU	
	Group Leader : GEORGEKUTTY KEERANCHIRA	1	Shri Georgekutty Keeranchira	0.4	11	
	Regional Council : VFPCCK	2	Shri Joseph	0.2		
	Village : MALOTH	3	Shri K.U.Varkey	0.4		
	Sub district : Hosdurg	4	Shri Sunny.P.P.	0.2		
	Block : KANHANGAD	5	Smt. Mary	0.1		
	District : KASARGOD	6	Smt. Tessy Sibi	0.2		
	Registration NO : LG0900009614		Total Area	1.5		
90	Group : HARITHAM PALLIKKARA	S.No	Farmer	Area	AEU	
	Group Leader : A.BHASKARAN	1	Shri A.Bhaskaran	0.1	7	
	Regional Council : VFPCCK	2	Shri Krishnan M.R	0.1		
	Village : PALLIKKARA	3	Shri M.Narayanan	0.13		
	Sub district : Hosdurg	4	Shri P.Vishwanathan	0.53		
	Block : KANHANGAD	5	Smt. Karthyayani .V	0.1		
	District : KASARGOD	6	Smt. Prameela.C	0.1		
	Registration NO : LG0900005403		Total Area	1.06		

91	Group :	HARITHAM RAVANESHWARAM	S.No	Farmer	Area	AEU
	Group Leader :	PRAJEESH.C	1	Shri Ashokan.K	0.26	2
	Regional Council :	VFPCK	2	Shri K.Kamarajan	1.38	
	Village :	AJANUR	3	Shri Karunakaran.T	1.37	
	Sub district :	Hosdurg	4	Shri Krishnan.V	0.97	
	Block :	KANHANGAD	5	Shri Kunhiraman.V	0.5	
	District :	KASARGOD	6	Shri Prajeesh.C	3.97	
	Registration NO :	LG0900005221	7	Shri Sukumaran.T	1	
			Total Area	9.45		
92	Group :	IDUMBA	S.No	Farmer	Area	AEU
	Group Leader :	PREMAN	1	Shri Chandranandan	0.2	11
	Regional Council :	VFPCK	2	Shri Preman	0.1	
	Village :	MATTANNUR	3	Shri Pushpan.K	0.05	
	Sub district :	Thalassery	4	Shri Rajeevan V	0.2	
	Block :	PERAVOOR	5	Shri Velandy Rajendran	0.1	
	District :	KANNUR		Total Area	0.65	
	Registration NO :	LG0900003710				
93	Group :	JAIVA	S.No	Farmer	Area	AEU
	Group Leader :	PREMANANDAN K S	1	Shri Charlie	0.4	5
	Regional Council :	VFPCK	2	Shri Jiji Devis	0.4	
	Village :	KOTTANELLUR	3	Shri Manual	0.26	
	Sub district :	Mukundapuram	4	Shri Premanandan K S	0.36	
	Block :	VELLANGALLUR	5	Shri Varghese T P	0.4	
	District :	THRISSUR	6	Smt. Sabeena	0.12	
	Registration NO :	LG0900001820		Total Area	1.94	
94	Group :	JAIVA KEERTHI	S.No	Farmer	Area	AEU
	Group Leader :	SURANDHRAN.M	1	Mr. A.J Thankachan	0.8	21
	Regional Council :	VFPCK	2	Mr. K.Balakrishnan	1	
	Village :	CHEERAL	3	Mr. Sasidharan M.M	0.4	
	Sub district :	Sulthanbathery	4	Ms. Sheela	1.2	
	Block :	SULTHAN BATHERY	5	Shri Surandhran.M	0.8	
	District :	WAYANAD		Total Area	4.2	
	Registration NO :	LG0900003176				
95	Group :	JAIVA SREE	S.No	Farmer	Area	AEU
	Group Leader :	K.R RAGHAVAN	1	Mr. Abdul Salam M A	0.1	11
	Regional Council :	VFPCK	2	Mr. Abdulla P	0.08	
	Village :	ELANKUR	3	Mr. Alavi A	0.2	
	Sub district :	Ernad	4	Mr. Alikkutty M	0.1	
	Block :	WANDOOR	5	Mr. Gopi V	0.1	
	District :	MALAPPURAM	6	Mr. Kunhimoideen	0.1	
	Registration NO :	LG0900001666	7	Mr. Kunhunni C	0.12	
			8	Mr. Kunjamu M	0.12	
			9	Mr. Narayanan V	0.4	

		10	Mr. Raman	0.1	11		
		11	Mr. Valiya Chathan	0.12			
		12	Mrs. Shantha	0.6			
			Total Area	2.14			
96	Group :	JAIVADEEPAM	S.No	Farmer	Area	AEU	
	Group Leader :	A.K.KRISHNANKUTTY	1	Mr. A.K.Krishnankutty	0.7		21
	Regional Council :	VFPCK	2	Mr. Gireesh	0.56		
	Village :	KUPPADI	3	Mr. Jayakumar P.S.	0.7		
	Sub district :	Sulthanbathery	4	Mr. Paulose Pv	0.2		
	Block :	SULTHAN BATHERY	5	Mrs. Reshmi	0.12		
	District :	WAYANAD	6	Mrs. Retnamma	0.08		
	Registration NO :	LG0900002011		Total Area	2.36		
97	Group :	JAIVALAYAM	S.No	Farmer	Area	AEU	
	Group Leader :	CHOYI PC	1	Mr. Bhaskaran Pp	0.1		11
	Regional Council :	VFPCK	2	Mr. Choyi Pc	0.1		
	Village :	VAZHAYUR	3	Mr. Mohanan B	0.3		
	Sub district :	Ernad	4	Mr. Noushadali	0.2		
	Block :	KONDOTTY	5	Mr. Rajan Pm	0.3		
	District :	MALAPPURAM	6	Mr. Sathrugnan	0.3		
	Registration NO :	LG0900002584	7	Mr. Sukumaran K	0.28		
			Total Area	1.58			
98	Group :	JAIVAM	S.No	Farmer	Area (Ha)	AEU	
	Group Leader :	PAUL	1	Mr. Bineash Thomas	0.1		20
	Regional Council :	VFPCK	2	Mr. Chandhran.P.C	0.1		
	Village :	KANIAMBETTA	3	Mr. Chandran	0.4		
	Sub district :	Vythiri	4	Mr. N.P Skariya	0.4		
	Block :	KALPETTA	5	Mr. Paul	0.72		
	District :	WAYANAD	6	Mr. Raju V.P	0.08		
	Registration NO :	LG0900002788	7	Mr. Thomas	0.12		
			Total Area	1.92			
99	Group :	JAIVAM	S.No	Farmer	Area	AEU	
	Group Leader :	ANTONY N P	1	Shri Antony N P	0.34		10
	Regional Council :	VFPCK	2	Shri Johnson M K	0.8		
	Village :	MELUR	3	Shri Kalukurumban K K	0.44		
	Sub district :	Mukundapuram	4	Shri Mathai V A	0.6		
	Block :	CHALAKKUDY	5	Shri Poulouse T V	0.25		
	District :	THRISSUR		Total Area	2.43		
	Registration NO :	LG0900001786					
100	Group :	JAIVAM	S.No	Farmer	Area	AEU	
	Group Leader :	SHELLY PHILIP	1	Mr. Joseph George	0.6		15
	Regional Council :	VFPCK	2	Mr. Joseph V J	1.52		

	Village :	THONDERNAD	3	Mr. Manu	0.98	15
	Sub district :	Mananthavady	4	Mr. Mathew George	1.2	
	Block :	MANANTHAVADY	5	Mr. Thomas George	0.4	
	District :	WAYANAD	6	Shri Shelly	1.36	
	Registration NO :	LG0900001943			6.06	
101	Group :	JAIVASANGAMI	S.No	Farmer	Area	AEU
	Group Leader :	JUDY P J	1	Shri Anish Devassia	0.4	20
	Regional Council :	VFPCK	2	Shri Bijesh Sebastian	1	
	Village :	CHERUKOTTUR	3	Shri Jayarajan	0.8	
	Sub district :	Mananthavady	4	Shri Judy P J	0.8	
	Block :	MANANTHAVADY	5	Shri Nobi O.V	0.4	
	District :	WAYANAD		Total Area	3.4	
Registration NO :	LG0900002308					
102	Group :	JAIVODAYA	S.No	Farmer	Area	AEU
	Group Leader :	K.A BASHEER	1	Miss. Ealliyamma	0.25	20
	Regional Council :	VFPCK	2	Mr. Chandrasegaran	1.12	
	Village :	THOMATTUCHAL	3	Shri Basavaraj Gowder	1	
	Sub district :	Sulthanbathery	4	Shri K.A Basheer	0.8	
	Block :	SULTHAN BATHERY	5	Shri Sivakumar	1	
	District :	WAYANAD		Total Area	4.17	
Registration NO :	LG0900002328					
103	Group :	JANAVI	S.No	Farmer	Area	AEU
	Group Leader :	K P RAVEENDRAN NAIR	1	Mr. Aji Kumar	0.1	8
	Regional Council :	Thanal	2	Mr. Deepak.R	0.03	
	Village :	MALAYINKEEZHU	3	Mr. K P Raveendran Nair	0.6	
	Sub district :	Neyyattinkara	4	Mrs. Geetha	0.01	
	Block :	NEMOM	5	Mrs. Laila	0.02	
	District :	TRIVANDRUM	6	Smt. Maya.V.S	0.09	
	Registration NO :	LG0900001752	7	Smt. Sabitha	0.06	
			Total Area	0.9		
104	Group :	JEEVA	S.No	Farmer	Area	AEU
	Group Leader :	GRACY JOSEPH	1	Mr. Abhijith A R	0.2	20
	Regional Council :	VFPCK	2	Mr. Abraham K	0.8	
	Village :	PANAMARAM	3	Mr. Anilkumar C R	0.4	
	Sub district :	Mananthavady	4	Mr. Gireesh K P	0.16	
	Block :	MANANTHAVADY	5	Mr. K J Rajesh	0.72	
	District :	WAYANAD	6	Mr. K M Prabhakaran	0.2	
	Registration NO :	LG0900002061	7	Mr. Mahadesh	0.8	
			8	Mr. N M Kuriakose	1	
			9	Mr. N R Akshayakumar	0.8	
			10	Mr. P U Joseph	0.4	
		11	Mr. Sajeev K G	0.68		

		12	Mr. Stalin K J	1	
		13	Smt. Gracy Joseph	0.2	20
			Total Area	7.36	
105	Group : JEEVAMRITHA	S.No	Farmer	Area	AEU
	Group Leader : RAMESH V B	1	Mr. Jaimes V O	0.24	10
	Regional Council : VFPCCK	2	Mr. Poulose K I	1.2	
	Village : KALLUR THEKKUMMURI	3	Mr. Sojan	0.34	
	Sub district : Mukundapuram	4	Shri Devis M T	0.42	
	Block : MALA	5	Shri Joy M	0.28	
	District : THRISSUR	6	Shri Ramesh V B	0.43	
	Registration NO : LG0900001910		Total Area	2.91	
106	Group : JEEVAN	S.No	Farmer	Area	AEU
	Group Leader : SIMON	1	Miss. Arputhameri	0.93	23
	Regional Council : Thanal	2	Mr. Antonyamalraj	1.21	
	Village : VADAKARAPATHY	3	Mr. Arul Joseph A	1.21	
	Sub district : Chittur	4	Mr. Henry	4.05	
	Block : CHITTUR	5	Mr. James	0.59	
	District : PALAKKAD	6	Mr. Kuzhanthaiswami	1.21	
	Registration NO : LG0900020953	7	Mr. Martin	0.61	
		8	Shri Simon	0.81	
			Total Area	10.6225	
107	Group : JEEVANA	S.No	Farmer	Area	AEU
	Group Leader : SHIBU C C	1	Mr. Shibu C	1.8	10
	Regional Council : VFPCCK	2	Shri Gilbi C B	0.39	
	Village : KALLUR THEKKUMMURI	3	Shri Jose K A	0.19	
	Sub district : Mukundapuram	4	Shri K Krishnakumar	1.68	
	Block : MALA	5	Shri Wilson P L	0.14	
	District : THRISSUR		Total Area	4.2	
	Registration NO : LG0900003441				
108	Group : JEEVANAM KARICHERI	S.No	Farmer	Area	AEU
	Group Leader : E.ASHALATHA	1	Shri Muraleedharan.K	0.1	7
	Regional Council : VFPCCK	2	Smt. E.Ashalatha	0.538	
	Village : PALLIKKARA	3	Smt. Indira.A	0.1	
	Sub district : Hosdurg	4	Smt. Kalyani.A	0.24	
	Block : KANHANGAD	5	Smt. Padmini.K	0.1	
	District : KASARGOD	6	Smt. Rathnavathi.K	0.4	
	Registration NO : LG0900005393	7	Smt. Rohini.T	0.1	
		8	Smt. Sreeja.K	0.92	
			Total Area	2.5	

109	Group :	JEEVANI	S.No	Farmer	Area	AEU
	Group Leader :	ABDUL JALEEL	1	Mr. Abdul Jaleel	0.54	15
	Regional Council :	VFPCK	2	Mr. Ashraf Tk	0.28	
	Village :	EDAKKARA	3	Mr. Damodaran A	0.6	
	Sub district :	Nilambur	4	Mr. Latheef M	0.2	
	Block :	NILAMBUR	5	Mr. Shibu P	0.4	
	District :	MALAPPURAM	6	Mr. Usman	0.4	
	Registration NO :	LG0900007327		Total Area	2.42	
110	Group :	JEEVANI	S.No	Farmer	Area	
	Group Leader :	SASI.N.K	1	Shri A N Thankappan	0.6	21
	Regional Council :	VFPCK	2	Shri Anil N P	1.8	
	Village :	SULTHANBATHERY	3	Shri Raghavan A C	3	
	Sub district :	Sulthanbathery	4	Shri Sasi.N.K	0.4	
	Block :	SULTHAN BATHERY	5	Shri Shiju	0.8	
	District :	WAYANAD		Total Area	6.6	
	Registration NO :	LG0900002214				
111	Group :	JELLIPARA OFS KISSAN MAITHERYA	S.No	Farmer	Area	
	Group Leader :	V.DASAN	1	Mr. Babu K J	0.4	15
	Regional Council :	ORGANIC FARMING SOCIETY	2	Mr. E Saji	0.4	
	Village :	AGALI	3	Mr. George Francis	0.4	
	Sub district :	Mannarkad	4	Mr. Jayan Cherian	2.79	
	Block :	ATTAPPADI	5	Mr. John Joseph	1.41	
	District :	PALAKKAD	6	Mr. Joseph Fransic	1	
	Registration NO :	LG0900008835	7	Mr. K Maniyan	1	
			8	Mr. K P George	1.2	
			9	Mr. K U Peter	0.8	
			10	Mr. Mathai	0.44	
			11	Mr. N J Raju	1	
			12	Mr. P U Binoy	0.63	
			13	Mr. Peter K	0.8	
			14	Mr. Roy	1	
			15	Mr. Sinu Thomas	2.07	
			16	Mr. Tasman P V	0.34	
			17	Mr. V.Dasan	0.8	
			18	Mr. Varghese P M	0.4	
			19	Mrs. Alphonsa	0.56	
			20	Mrs. Molly George	0.6	
			21	Mrs. Sali Babu	0.4	
			22	Mrs. Sulojena	0.4	
			Total Area	18.84		

112	Group :	JOYTHI	S.No	Farmer	Area	AEU
	Group Leader :	SHEELA A S	1	Mr. Chandrasekharan	0.03	9
	Regional Council :	Thanal	2	Mr. E Vijaya Bhas	0.24	
	Village :	THIRUVANANTHAPURAM	3	Mr. Manoj Kumar,S	0.47	
	Sub district :	Thiruvananthapuram	4	Mr. Sunilraj.M.S	0.61	
	Block :	THIRUVANANTHAPURAM RURAL	5	Mr. V Mohan	0.11	
	District :	TRIVANDRUM		Total Area	1.45	
	Registration NO :	LG0900013067				
113	Group :	JYOTHIS WEST-ELLERI	S.No	Farmer	Area	
	Group Leader :	JACOB MATHEW	1	Shri Biju	2.88	15
	Regional Council :	VFPCK	2	Shri Biju	1.88	
	Village :	WEST ELERI	3	Shri Jacob	3.47	
	Sub district :	Hosdurg	4	Shri Muhammed	1.17	
	Block :	KANHANGAD	5	Shri Thomas	1.25	
	District :	KASARGOD	6	Shri Thomas.P.C	1.38	
	Registration NO :	LG0900004899	7	Shri Tomy	1.8	
			Total Area	13.83		
114	Group :	KADAKKAL	S.No	Farmer	Area	AEU
	Group Leader :	BADARUDEEN.M	1	Shri Abdul Sathar.M	0.73	9
	Regional Council :	VFPCK	2	Shri Abdul Vaheed	0.6	
	Village :	MANCODE	3	Shri Badarudeen.M	0.5	
	Sub district :	Kottarakkara	4	Shri Basheerudeen.A	0.16	
	Block :	CHADAYAMANGALAM	5	Shri Dinesh Panicker	1	
	District :	KOLLAM		Total Area	2.99	
	Registration NO :	LG0900001723				
115	Group :	KADAMPAZHIPPURAM	S.No	Farmer	Area	
	Group Leader :	AHAMMED KABEER	1	Mr. Abdul Rahman.V	0.2	10
	Regional Council :	VFPCK	2	Mr. Ahammed Kabeer	0.3	
	Village :	KADAMPAZHIPPURAM-II	3	Mr. Bharathan	0.12	
	Sub district :	Ottappalam	4	Mr. Jose	0.3	
	Block :	SREEKRISHNAPURAM	5	Mr. K.C.Mani	0.16	
	District :	PALAKKAD	6	Mr. Krrisnan Kutty .M	0.1	
	Registration NO :	LG0900001712	7	Mr. Kuttikrishnan Nair	0.1	
			8	Mr. Narayanan	0.12	
			9	Mr. Prabhakaran.P	0.12	
			10	Mr. Rajendran	0.2	
			11	Mr. Sahadevan	0.16	
			12	Mr. Sudhakaran	0.2	
			13	Mr. T.Chandrakumaran	0.1	
			14	Mr. Vishwambaran	0.2	
			15	Shri Rajan	0.12	
			Total Area	2.5		

116	Group :	KAIRALI	S.No	Farmer	Area	AEU
	Group Leader :	ASHOKAN	1	Mr. M Ramakrishnan	0.08	3
	Regional Council :	VFPCCK	2	Mr. Shasi K	0.14	
	Village :	THAMARAKKULAM	3	Mr. Vijayan	1.6	
	Sub district :	Mavelikkara	4	Mrs. Sujatha Siddarthan	0.1	
	Block :	BHARANICAVU	5	Shri Ashokan	0.1	
	District :	ALAPPUZHA		Total Area	2.02	
Registration NO :	LG0900002499					
117	Group :	KALAVOOR	S.No	Farmer	Area	AEU
	Group Leader :	D SUBRAMANIYAN	1	Miss. Ak Kowmudini	0.32	1
	Regional Council :	VFPCCK	2	Miss. Jothyc	0.8	
	Village :	KALAVOOR	3	Mr. Balakrishnan Pv	0.28	
	Sub district :	Ambalappuzha	4	Mr. Chandrashekar	0.34	
	Block :	ARYAD	5	Mr. P R Sathyan	0.28	
	District :	ALAPPUZHA	6	Mr. Paramesharan	0.4	
	Registration NO :	LG0900002149	7	Mr. R Anandan	0.36	
			8	Mr. Sathyan Pr	0.32	
			9	Mr. Shankara Narayanan	0.2	
			10	Mr. Sugunan V V	0.32	
			11	Shri D Subramaniyan	0.4	
		12	Shri Rajashekar R	0.48		
			Total Area	4.5		
118	Group :	KALLARA	S.No	Farmer	Area	AEU
	Group Leader :	MOHANAN PILLAI	1	Mr. Badarudeen.U	0.1	9
	Regional Council :	VFPCCK	2	Mr. Devadasan.P	0.1	
	Village :	KALLARA	3	Mr. Reghunathan.D	0.1	
	Sub district :	Nedumangad	4	Shri G.Sugathan	0.4	
	Block :	VAMANAPURAM	5	Shri Mohanan Pillai	0.1	
	District :	TRIVANDRUM		Total Area	0.8	
Registration NO :	LG0900002847					
119	Group :	KANAKAKUNNU1	S.No	Farmer	Area	AEU
	Group Leader :	BENNY MATHEW	1	Shri Benny Mathew	0.8	14
	Regional Council :	VFPCCK	2	Shri Jins Scaria	1	
	Village :	VATHIKUDY	3	Shri Joseph Varghese	0.8	
	Sub district :	Udumbanchola	4	Shri Mathew Chacko	0.4	
	Block :	IDUKKI	5	Shri Murali P K	0.4	
	District :	IDUKKI	6	Shri Saji Krishnankutty	0.8	
Registration NO :	LG0900003396	7	Shri Sasidharan Nair	0.4		
			Total Area	4.6		
120	Group :	KANCHIYAR	S.No	Farmer	Area	AEU
	Group Leader :	THOMAS JOSEPH	1	Mr. Abraham Joseph	0.8	14
Regional Council :	Manarcadu Social Service Society	2	Mr. Baby Joseph	0.8		

	Village :	AYYAPPANCOIL	3	Mr. Baiju Chacko	0.896	14
	Sub district :	Udumbanchola	4	Mr. Benny Thomas	0.24	
	Block :	KATTAPPANA	5	Mr. Binish Scariah	1.8	
	District :	IDUKKI	6	Mr. Dominic Savio P V	0.512	
	Registration NO :	LG0900001129	7	Mr. George Augusthy	0.28	
			8	Mr. Gopakumar P.G	0.8	
			9	Mr. Joseph Mathai	1.6	
			10	Mr. Muralidharakurup	0.72	
			11	Mr. Pappachan P M	0.8	
			12	Mr. Reji John	0.44	
			13	Mr. Sarasamma Dasukutty	0.696	
			14	Mr. Sebastian George	0.3	
			15	Mr. Shajimon Thomas	1.8	
			16	Mr. Shimmichan Scariah	0.8	
			17	Mr. Thampi Jacob	0.6	
			18	Mr. Thomas Joseph	1.08	
			19	Mr. Varghese Joseph	0.4	
			20	Mrs. Jessy Mathew	1.2	
			21	Mrs. Mary	0.6	
			22	Shri Abraham Joseph	0.4	
			23	Shri Baby Abraham	0.392	
			24	Shri Benny Mathew	1.3	
			25	Shri Joseph Chacko	0.4	
			26	Shri Joseph P T	0.32	
			27	Shri Joseph Varghese	0.6	
			28	Shri K C Kuriyakose	0.8	
			29	Shri K N Kumaran	1.2	
			30	Shri K N Vishvambaran	0.8	
			31	Shri K R Sukumaran	0.4	
			32	Shri Mathew Joseph	0.4	
			33	Shri Mathew Thomas	0.8	
			34	Shri Wilson Thomas	0.8	
				Total Area	25.776	
	121	Group :	KANJANA	S.No	Farmer	
	Group Leader :	M.C ANTONY	1	Mr. A.Sasidharan	0.588	20
	Regional Council :	VFPCCK	2	Mr. Ammadhe .P	0.2	
	Village :	MANANTHAVADY	3	Mr. Bhaskaran	0.2	
	Sub district :	Mananthavady	4	Mr. Dibin Chandran	0.14	
	Block :	MANANTHAVADY	5	Mr. Joseph .T.P	0.32	
	District :	WAYANAD	6	Mr. M.Vijayan	0.1	
	Registration NO :	LG0900002752	7	Mr. Manu Mon	1.6	
			8	Mr. P.D Joseph	0.2	

		9	Mr. Prakash.V.S	0.1	20
		10	Mr. Pramrajan.A	0.2	
		11	Mr. Raju M.K	0.196	
		12	Mr. Rvindran	0.6	
		13	Mr. Sanal Kumar	0.1	
		14	Mr. Surandran	0.1	
		15	Mr. Vijayan .K.P	0.2	
		16	Mr. Vinodhe Kumar M.M	0.1	
		17	Shri M.C Antony	0.2	
			Total Area	5.144	
122	Group : KANJIRAPALLY1	S.No	Farmer	Area	AEU
	Group Leader : THOMAS T.M	1	Shri Baiju Ephrem	0.4	12
	Regional Council : VFPCK	2	Shri Baji Abraham	0.24	
	Village : KOOVAPPALLY	3	Shri Biju Varghese	0.4	
	Sub district : Kanjirappally	4	Shri James Kurian	0.4	
	Block : KANJIRAPPALLY	5	Shri P.J Thomas	0.12	
	District : KOTTAYAM	6	Shri Thomas T.M	0.1	
	Registration NO : LG0900004028		Total Area	1.66	
123	Group : KANJIRAPPALLY	S.No	Farmer	Area	AEU
	Group Leader : JOSE JOSEPH	1	Mr. K K Abraham	0.6	9
	Regional Council : Manarcadu Social Service Society	2	Mr. Philip Thomas	0.756	
	Village : POOVARANY	3	Mr. Arun Mathew	3.9	
	Sub district : Meenachil	4	Mr. Benny Jacob	0.6	
	Block : LALAM	5	Mr. Biju Mathew	0.8	
	District : KOTTAYAM	6	Mr. Dr. George Mathew	1.6	
	Registration NO : LG0900001149	7	Mr. George Abraham	0.9	
		8	Mr. George Joseph (Thankachan)	0.4	
		9	Mr. George K Thomas	3.92	
		10	Mr. George Thomas	0.4	
		11	Mr. George Varghese	3.9	
		12	Mr. Ginu D Mathew	0.68	
		13	Mr. Jacob P James	0.4	
		14	Mr. James J Kollamkulam	3.6	
		15	Mr. James Joseph	0.8	
		16	Mr. Jose J Kallivayalil	3.8	
		17	Mr. Jose Joseph	3.2	
		18	Mr. Jose Scariah	0.4	
		19	Mr. Josekutty Mathew	1.2	
		20	Mr. Joseph K Tharappel	4.8	

			21	Mr. K I Thomas	1.6	9	
			22	Mr. K Jacob	1		
			23	Mr. K K Joseph	1.2		
			24	Mr. K K Sebastian Kuruvilla	4.4		
			25	Mr. K. M. Francis	3		
			26	Mr. K. T Mathew	0.8		
			27	Mr. Kurian Thomas	2		
			28	Mr. Kuruvilla Joseph	6.8		
			29	Mr. Lali Kuruvila	2		
			30	Mr. Mani J Tharappel	3		
			31	Mr. Nicolas P T	0.48		
			32	Mr. P M Mathew	1		
			33	Mr. Sebastian Cherian	0.8		
			34	Mr. Sebastian Joseph	0.4		
			35	Mr. Shajan Mathew	0.4		
			36	Mr. T T Thomas	1.2		
			37	Mr. T.A Sebastian	2		
			38	Mr. Thomas Alexander	0.8		
			39	Mr. Thomas Mathew	0.8		
			40	Mr. Thomas Thomas	0.8		
			41	Mr. Tony Kuruvilla	1.6		
			42	Mr. V. P. Kurian	2.2		
			43	Mr. Varkey Varkey	2.1		
			44	Mrs. Ani Kuruvilla	4.8		
			45	Mrs. Ani Rajan	0.4		
			46	Mrs. Elizabeth Liya Thomas	0.8		
			47	Mrs. Mariyamma Mathew	0.4		
			48	Mrs. Mary Kurivila	3.9		
			49	Mrs. Mary Thomas	0.6		
			50	Mrs. Pushpa Abraham	0.8		
			51	Mrs. Tessa Thomas	0.8		
			52	Mrs. Thressiamma Thomas	1.6		
				Total Area	91.14		
124	Group :	KANJOOR 1	S.No	Farmer	Area		AEU
	Group Leader :	V.D .RADHAKRISHNAN	1	Mr. Jose P.P	0.4		9
	Regional Council :	VFPCK	2	Mr. M Vareed	0.2		
	Village :	CHOWWARA	3	Shri Antony A E	0.24		
	Sub district :	Aluva	4	Shri Chacko P P	0.3		
	Block :	PARAKKADAV	5	Shri V.D .Radhakrishnan	0.17		
	District :	ERNAKULAM		Total Area	1.31		
	Registration NO :	LG0900003127					

125	Group :	KANNAMPADY	S.No	Farmer	Area	AEU
	Group Leader :	ESSAK HANOK	1	Mr. Ajesh T D	1.2	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. Ambadi A C	2	
	Village :	UPPUTHARA	3	Mr. Andrayose	0.8	
	Sub district :	Peerumade	4	Mr. Antony Mathai	0.6	
	Block :	KATTAPPANA	5	Mr. Babu John	1	
	District :	IDUKKI	6	Mr. Balakrishnan	0.8	
	Registration NO :	LG0900001152	7	Mr. Bhaskaran	1.2	
			8	Mr. Bhaskaran P.K	0.2	
			9	Mr. Binoy Krishnankutty	1.4	
			10	Mr. Chandran C R	1.6	
			11	Mr. Chandran Chellappan	1.2	
			12	Mr. Chandran Kandan	1.4	
			13	Mr. Charly Raman	0.8	
			14	Mr. Deepumon P.C	0.8	
			15	Mr. Essakh Hanock	1	
			16	Mr. Gangadharan	3.6	
			17	Mr. Gangadharan	1.6	
			18	Mr. George Ouseph	0.6	
			19	Mr. Gopalakrishnan	2.4	
			20	Mr. Gopalan	0.24	
			21	Mr. Gopi K.R.	0.268	
			22	Mr. Govindan Kandan	0.4	
			23	Mr. Govindan Raman	0.4	
			24	Mr. Isaac Mossa	1.2	
			25	Mr. James Raman	1.2	
			26	Mr. Jamest.D	0.36	
			27	Mr. Jose Varghese	1	
			28	Mr. Joseph Baby	0.8	
			29	Mr. Joseph C G	0.8	
			30	Mr. Joy K.A	0.6	
			31	Mr. Kamalakshi Narayanan	1.2	
			32	Mr. Kesavan	1	
			33	Mr. Kesavan	0.24	
			34	Mr. Kumaran Raman	1.2	
			35	Mr. Madanamohanan	0.68	
			36	Mr. Madhavan E K	0.8	
			37	Mr. Mathai	0.4	
			38	Mr. Mathew Varkey	2	
			39	Mr. Monachan C M	0.8	
			40	Mr. Murali	0.8	
			41	Mr. Narayanan K.S.	1.6	

	42	Mr. Narayanan Sreedharan	0.6	14
	43	Mr. Padmanabhan E R	1.12	
	44	Mr. Prabhakaran	0.8	
	45	Mr. Pushpan V K	0.6	
	46	Mr. Raghavan	0.4	
	47	Mr. Raghavan C R	0.4	
	48	Mr. Raghavan K.K.	0.8	
	49	Mr. Rajan	0.3	
	50	Mr. Rajappan V K	1	
	51	Mr. Raju Koshy	0.4	
	52	Mr. Ramakrishnan N G	1.2	
	53	Mr. Raman	2	
	54	Mr. Raman Monichen	0.64	
	55	Mr. Raman Raghavan	1	
	56	Mr. Ramankutty K A	0.8	
	57	Mr. Reghu Gopi	0.28	
	58	Mr. Rejimonn.K	1.52	
	59	Mr. Sasi Gopalan	1.2	
	60	Mr. Sasi T K	1.5	
	61	Mr. Sekharan T K	2	
	62	Mr. Sijan Thomas	0.68	
	63	Mr. Sivan Govindan	0.6	
	64	Mr. Somarajan K S	2.4	
	65	Mr. Sreedharan Govindan	0.4	
	66	Mr. Subhash Ramankutty	0.6	
	67	Mr. Suresh P.G.	0.456	
	68	Mr. T P Jeevans	3.2	
	69	Mr. Tenan Parameswaran	3.2	
	70	Mr. Thankappan	1.6	
	71	Mr. Thankappan Kesavan	1.488	
	72	Mr. Thankappan Kochukunju	0.24	
	73	Mr. Thankappank.K.	0.46	
	74	Mr. Thomas K S	1.6	
	75	Mr. Thomson	0.8	
	76	Mr. Varghese M.M.	0.6	
	77	Mr. Vijayakumar	0.6	
	78	Mr. Vimalkumar.N.	0.2	
	79	Mr. Vinod Kesavan	0.48	
	80	Mr. Viswambharan Gopalan	1.2	
	81	Mrs. Aniamma Rapheal	1	
	82	Mrs. Annamma Hanock	1.4	
	83	Mrs. Bindumol V.T.	0.4	

	84	Mrs. Devaki Rajan	0.8	14
	85	Mrs. Janaki Keshavan	1.2	
	86	Mrs. Jolly Jose	0.52	
	87	Mrs. Jolly Sukumaran	0.3	
	88	Mrs. Kalyani Ramankutty	0.44	
	89	Mrs. Kamala T R	1	
	90	Mrs. Karthyayani	1.6	
	91	Mrs. Kunjamma Thomas	0.6	
	92	Mrs. Laisamma Mathew	0.48	
	93	Mrs. Leela Gangadharan	0.2	
	94	Mrs. Leela Raman	2.4	
	95	Mrs. Leela Unni	0.48	
	96	Mrs. Leelamani Raghavan	1.6	
	97	Mrs. Leelamani Sasi	0.572	
	98	Mrs. Leelamma	0.4	
	99	Mrs. Leelamma Divakaran	0.532	
	100	Mrs. Leelamma Raju	0.32	
	101	Mrs. Leelamma Raman	1.2	
	102	Mrs. Leelamma Sasi	0.6	
	103	Mrs. Malathy Rajesh	1.1	
	104	Mrs. Mani Kuttappan	0.4	
	105	Mrs. Molly John	0.28	
	106	Mrs. Nisha K K	0.8	
	107	Mrs. Omana Joseph	0.4	
	108	Mrs. Omana Sankaran	0.6	
	109	Mrs. Ponnamma Damodharan	0.936	
	110	Mrs. Radhamony Johnson	0.8	
	111	Mrs. Rajamma Balayyan	0.6	
	112	Mrs. Rajamma Kunjumon	0.32	
	113	Mrs. Renjini Mohanan	0.8	
	114	Mrs. Rosamma Joseph	1.6	
	115	Mrs. Santhamma Kesavan	0.6	
	116	Mrs. Santhamma Thankachan	1.6	
	117	Mrs. Sarakkutty Joseph	0.8	
	118	Mrs. Sarojini Balakrishnan	2.4	
	119	Mrs. Sarojini Ramankutty	1.2	
	120	Mrs. Sherly Abraham	1	
	121	Mrs. Soudamini Haridas	1.2	
	122	Mrs. Soudamini Rajappan	0.4	
	123	Mrs. Subitha Sivan	0.8	
	124	Mrs. Suganthamma	0.516	
	125	Mrs. Suma Ramakrishnan	0.8	

			126	Mrs. Sumathy Kumaran	0.324	
			127	Mrs. Sumathy Raju	0.6	
			128	Mrs. Sunila Madhu	0.288	14
			129	Mrs. Thankamma Gopalan	0.2	
			130	Mrs. Thankamma Gopi	1	
			131	Mrs. Thankamma Maman	0.272	
			132	Mrs. Thankamma P.K.	0.12	
			133	Mrs. Thankamma Paulose	0.2	
			134	Mrs. Thankamma Saji	0.8	
			135	Mrs. Usha Ashokan	0.8	
			136	Mrs. Ushan.R.	1	
			137	Mrs. Valsala Ratheesh	0.6	
			138	Mrs. Valsamma Joy	2	
			139	Mrs. Valsamma Mohan	0.4	
			140	Mrs. Valsamma Rajappan	0.8	
			141	Mrs. Vasumathy Biju	2.8	
			142	Mrs. Vijayakumari Ravi	0.736	
			143	Mrs. Vijayamma Rajappan	0.4	
			144	Mrs. Vijayamma Sasi	0.8	
			145	Mrs. Vilasini	0.8	
			146	Mrs. Vinitha Shaji	1.2	
				Total Area	135.688	
126	Group :	KANTHALLOOR	S.No	Farmer	Area	AEU
	Group Leader :	S. SENTHILKUMAR	1	Mr. A M Ganeshan	0.8	17
	Regional Council :	Manarcadu Social Service Society	2	Mr. A.S Keshavan	0.6	
	Village :	KEEZHANTHOOR	3	Mr. Anandraj P.	1.6	
	Sub district :	Devikulam	4	Mr. B.A Jathakan	0.8	
	Block :	DEVIKULAM	5	Mr. B.D Ramchandran	1.4	
	District :	IDUKKI	6	Mr. C S Thankaraj	0.8	
	Registration NO :	LG0900001154	7	Mr. C Veeramani	0.8	
			8	Mr. C.A Subramahnyan	0.572	
			9	Mr. C.N Nadarajan	0.6	
			10	Mr. C.R Muthuswami	1	
			11	Mr. C.S Kumar	0.8	
			12	Mr. C.T Achuthan	0.6	
			13	Mr. C.T Murukan	3	
			14	Mr. C.T Ramaswamy	0.8	
			15	Mr. D. Shivanjanam	2	
			16	Mr. Damodaran M.P	0.8	
			17	Mr. E U John	1.2	
			18	Mr. Elayaraja M	0.8	

	19	Mr. G. Mayan Perumal	0.32	17
	20	Mr. G. Vetrivel	1.4	
	21	Mr. J.Jayakkody	0.6	
	22	Mr. Jnanasundaran	0.6	
	23	Mr. K A Daivanayagam	1.4	
	24	Mr. K K Vinayakan	0.6	
	25	Mr. K Manikandam	0.7	
	26	Mr. K. Gopalan	0.8	
	27	Mr. K. Paramasivan	0.6	
	28	Mr. K. R Subramanyan	1.6	
	29	Mr. K.G Dandapany	0.8	
	30	Mr. K.K Ganeshan	1.6	
	31	Mr. K.R Perumalswamy	1.2	
	32	Mr. K.R Sahadevan	0.8	
	33	Mr. K.S Arumukham	0.8	
	34	Mr. K.S Perumal	2	
	35	Mr. K.S Ramkumar	0.6	
	36	Mr. K.S Rengaswami	2.4	
	37	Mr. K. V Murukan	0.4	
	38	Mr. K.V Prabhu	0.8	
	39	Mr. Karuppaiah. P	0.6	
	40	Mr. M Girija	1.2	
	41	Mr. M K Pazhaniswami	0.4	
	42	Mr. M K Prahladhan	0.8	
	43	Mr. M P Dharmalingam	0.7	
	44	Mr. M P. Arjunan	0.4	
	45	Mr. M R Dhandapani	1.2	
	46	Mr. M R Dhandapani	0.6	
	47	Mr. M R Kumaravel	0.4	
	48	Mr. M S Kathirvel	0.4	
	49	Mr. M. Sudarvel	0.8	
	50	Mr. M.A Ramachandran	0.34	
	51	Mr. M.B Guminathan	0.8	
	52	Mr. M.K Bhuvaneswaran	0.3	
	53	Mr. M.K Dandapany	0.6	
	54	Mr. M.K Paalraj	0.6	
	55	Mr. M.K Rathinaswamy	0.6	
	56	Mr. M.N Radhakrishnan	0.6	
	57	Mr. M.R Narayanan	0.8	
	58	Mr. M.R Sivakuamar	0.6	
	59	Mr. Manikandan	1.2	
	60	Mr. Manimekhala	0.4	

	61	Mr. Muthuswami C R	1	17
	62	Mr. N. Mayilvahanan	0.28	
	63	Mr. Njanasekharan M.T.	0.4	
	64	Mr. Njanasundaran S T	0.32	
	65	Mr. O A Ayyappan	0.8	
	66	Mr. O K Dhandapani	2.6	
	67	Mr. O K Piraysoodi	0.6	
	68	Mr. O K Sivam	1.2	
	69	Mr. O R Nithyanandam	0.4	
	70	Mr. O.S Manikandan	1.2	
	71	Mr. O.S Rajendrin	0.6	
	72	Mr. P A Janakan	0.8	
	73	Mr. P A Karunakaran	1	
	74	Mr. P A Venugopal	1	
	75	Mr. P Givindaraj	0.8	
	76	Mr. P.A Muthu	1.2	
	77	Mr. P.C Vijayan	1	
	78	Mr. P.K Sankaran	0.8	
	79	Mr. P.M Rajamani	0.9	
	80	Mr. R Subramanyan	1	
	81	Mr. R. Lakshmanan	0.4	
	82	Mr. R. Manikandan	1.2	
	83	Mr. R. Nagaraj	1.2	
	84	Mr. R. Ravichandran	0.8	
	85	Mr. Raju R	0.4	
	86	Mr. Ramakrishnan S	0.6	
	87	Mr. S Karthikeyan	0.7	
	88	Mr. S R Manikandan	1.4	
	89	Mr. S S Raghavan	0.8	
	90	Mr. S Senthilkumar	0.4	
	91	Mr. S. Gopalakrishnan	1	
	92	Mr. S. Kodandapany	0.8	
	93	Mr. S. Krishnan	0.6	
	94	Mr. S. Madhavan	0.628	
	95	Mr. S. Nadaraj	0.8	
	96	Mr. S.P Kannadasan	0.4	
	97	Mr. S.R Bhagavathy	0.8	
	98	Mr. S.R Bhagavathy	0.6	
	99	Mr. S.R Murukan	0.6	
	100	Mr. S.R Nadarajan	0.6	
	101	Mr. Saalivahanan	1	
	102	Mr. Selvaraj M.A.	0.4	

			103	Mr. Shattiyavaany	0.8	17
			104	Mr. Subburaj M	1	
			105	Mr. Suresh K.	1.4	
			106	Mr. T.M Ramaswamy	1.2	
			107	Mr. T.R Eeswaran	0.16	
			108	Mr. T.S Gunasekharan	2	
			109	Mr. T.S Murukan	0.4	
			110	Mr. T.S Sachuthanandan	54	
			111	Mr. T.T Sivaputran	0.6	
			112	Mr. Thirmurukan	2	
			113	Mr. V V Parannaman	1.2	
			114	Mr. V.A Njanapandithan	0.4	
			115	Mr. V.A Palaniswamy	0.8	
			116	Mr. V.G Ganeshan	0.8	
			117	Mr. V.G Murukan	0.8	
			118	Mr. V.S Kannan	0.8	
			119	Mrs. Anansuya	0.8	
			120	Mrs. Chellammal.A	0.4	
			121	Mrs. Chinnamma Kuriakose	0.8	
			122	Mrs. Dhanalakshmi	2.4	
			123	Mrs. K Rajeswary	1.2	
			124	Mrs. Kalayarasi Senthil Kumar	0.4	
			125	Mrs. Lakshmi	0.6	
			126	Mrs. Shanthly Vasudevan	0.6	
			127	Mrs. Sooryakala Bose	0.6	
			128	Mrs. Sukumari Gopalakrishnan	0.7	
			129	Mrs. Sulochana Dandapani	0.4	
				Total Area	164.62	
127	Group :	KARSHIKAM	S.No	Farmer	Area	
	Group Leader :	SREEJA SANNI	1	Mr. Ajayan Jose	0.1	20
	Regional Council :	VF	2	Mr. E.S Skariya	0.1	
	Village :	AMBALAVAYAL	3	Mr. Joneson E.M	0.1	
	Sub district :	Sulthanbathery	4	Mr. Shiju	0.2	
	Block :	SULTHAN BATHERY	5	Smt. Sreeja	0.28	
	District :	WAYANAD		Total Area	0.78	
	Registration NO :	LG0900004995				

128	Group :	KARTHIKA	S.No	Farmer	Area	AEU
	Group Leader :	PRADEEP VIJAYAN	1	Mr. Murali K	0.32	10
	Regional Council :	Thanal	2	Mr. Ramanathan	0.16	
	Village :	MARATHAKKARA	3	Mr. Unnikrishnan	0.49	
	Sub district :	Thrissur	4	Shri Pradeep	0.28	
	Block :	IRINJALAKKUDA	5	Smt. Ushakumai	0.3	
	District :	THRISSUR		Total Area	1.55	
	Registration NO :	LG0900007925				
129	Group :	KATHIR	S.No	Farmer	Area	AEU
	Group Leader :	WILLS M J	1	Miss. Jubairia	0.02	8
	Regional Council :	Thanal	2	Shri Bhaskaran	0.99	
	Village :	VENGANOOR	3	Shri Jaya R	0.02	
	Sub district :	Thiruvananthapuram	4	Shri Krishnakumar V	0.24	
	Block :	ATHIYANNOOR	5	Shri Prabhakaran	0.4	
	District :	TRIVANDRUM		Total Area	1.68	
	Registration NO :	LG0900007575				
130	Group :	KATTAKADA	S.No	Farmer	Area	AEU
	Group Leader :	MOHANAKUMAR.A	1	Mr. Krishnankutty N	0.16	12
	Regional Council :	VFPCK	2	Mr. Mohana Kumar K	0.24	
	Village :	THIRUVANANTHAPURAM	3	Shri B.Sukumaran Nair	0.4	
	Sub district :	Neyyattinkara	4	Shri Janardhanan Nair D	0.1	
	Block :	VELLANAD	5	Shri Mohanakumar.A	0.4	
	District :	TRIVANDRUM		Total Area	1.3	
	Registration NO :	LG0900002910				
131	Group :	KATTAMPAK	S.No	Farmer	Area	AEU
	Group Leader :	SHAJI JOSEPH	1	Shri George K V	0.1	9
	Regional Council :	VFPCK	2	Shri James Varkey	0.4	
	Village :	NJEEZHOOR	3	Shri Jose Paul	0.5	
	Sub district :	Vaikom	4	Shri Kurien Ulahannan	0.24	
	Block :	VAIKOM	5	Shri Rajesh James	0.2	
	District :	KOTTAYAM	6	Shri Sadashivan D	0.2	
	Registration NO :	LG0900004008	7	Shri Shaji Joseph	0.2	
			Total Area	1.84		
132	Group :	KEERTHI	S.No	Farmer	Area	AEU
	Group Leader :	V.K RAJAN	1	Mr. Balakrishnan Nair	0.2	15
	Regional Council :	VFPCK	2	Mr. C.K Udhayan	0.2	
	Village :	VELLAMUNDA	3	Mr. C.Rajan	0.6	
	Sub district :	Mananthavady	4	Mr. K .A Vijayan	0.6	
	Block :	MANANTHAVADY	5	Mrs. Preetha	0.4	
	District :	WAYANAD	6	Shri Sasidharan	0.12	
	Registration NO :	LG0900004801	7	Shri V.K Rajan	0.8	
			Total Area	2.92		

133	Group :	KEERTHI	S.No.	Farmer	Area	AEU
	Group Leader :	MATHEW KOSHY	1	Shri A. C Chacko	0.2	14
	Regional Council :	VFPCCK	2	Shri Alex. M. John	0.2	
	Village :	KOZHENCHERY	3	Shri Mathew Koshy	0.2	
	Sub district :	Kozhenchery	4	Shri Mohandas P. N	0.2	
	Block :	ELANTHOOR	5	Shri T. N Krishnapillai	0.2	
	District :	PATHANAMTHITTA		Total Area	1	
Registration NO :	LG0900001922					
134	Group :	KEERTHI NOONHIYIL	S.No	Farmer	Area	AEU
	Group Leader :	PREETHI K T	1	Smt. Ambika	0.24	11
	Regional Council :	VFPCCK	2	Smt. Meenakshi M	0.24	
	Village :	MADIKAI	3	Smt. P Narayani	0.001	
	Sub district :	Hosdurg	4	Smt. Preethi K T	0.2	
	Block :	KANHANGAD	5	Smt. Savithri P	0.14	
	District :	KASARGOD		Total Area	0.821	
Registration NO :	LG0900003716					
135	Group :	KEERTHY	S.No	Farmer	Area	AEU
	Group Leader :	RAJU VARGHESE	1	Shri Itty Chacko	0.1	9
	Regional Council :	VFPCCK	2	Shri P S Achenkunju	0.1	
	Village :	MALLAPPALLY	3	Shri P S Rajan	0.16	
	Sub district :	Mallappally	4	Shri Raju Varghese	0.12	
	Block :	MALLAPPALLY	5	Shri Regi K George	0.1	
	District :	PATHANAMTHITTA	6	Shri Saji Eapen	0.1	
Registration NO :	LG0900005750		Total Area	0.68		
136	Group :	KISANKADANADU	S.No	Farmer	Area	AEU
	Group Leader :	K V GEORGE	1	Mr. George Mathew	0.04	12
	Regional Council :	VFPCCK	2	Mr. K V George	0.408	
	Village :	KADANAD	3	Mr. Philip Poovathani	0.341	
	Sub district :	Meenachil	4	Mr. Sebastian Joseph	0.24	
	Block :	LALAM	5	Mr. Shelfy Jose	0.12	
	District :	KOTTAYAM	6	Mr. V I Abraham	0.2	
	Registration NO :	LG0900001996	7	Shri Baby Joseph	0.2	
		8	Shri Sunny Joseph	0.2		
			Total Area	1.749		
137	Group :	KISSAN	S.No	Farmer	Area	AEU
	Group Leader :	P.V SANKARAVARYAR	1	Miss. Jomy Joseph	0.26	15
	Regional Council :	VFPCCK	2	Miss. Nirmala.P	0.8	
	Village :	THAVINHAL	3	Mr. Manoj Pk	1.4	
	Sub district :	Mananthavady	4	Mr. Santhosh Babu	0.52	
	Block :	MANANTHAVADY	5	Shri P.V Sankaravaryar	0.4	
	District :	WAYANAD		Total Area	3.38	
Registration NO :	LG0900004375					

138	Group :	KIZHAKKANCHERYI	S.No	Farmer	Area	AEU
	Group Leader :	K.P.BABY	1	Mr. A.V.Kunju	0.1	22
	Regional Council :	VFPCCK	2	Mr. Abdul Rahman	0.12	
	Village :	KIZHAKKENCHERI-I	3	Mr. Ashok Kumar	0.1	
	Sub district :	Alathur	4	Mr. Chandran.C	0.1	
	Block :	ALATHUR	5	Mr. Haridasan.K	0.2	
	District :	PALAKKAD	6	Mr. K.C.Jacob	0.1	
	Registration NO :	LG0900001715	7	Mr. K.Narayanan	0.12	
			8	Mr. K.P.Thomas	0.2	
			9	Mr. M.C.Baby	0.1	
			10	Mr. M.L.George	0.12	
			11	Mr. Markose.C.P	0.12	
			12	Mr. Neela Kannan	0.1	
			13	Mr. Paul.P.K	0.1	
			14	Mr. Radhakrishnan	0.1	
			15	Mr. Shahjahan	0.12	
			16	Mr. Shibu Thomas	0.1	
			17	Mr. Sundaran	0.1	
			18	Mr. Suresh.C	0.1	
			19	Mrs. Ambika	0.1	
			20	Ms. Moli	0.1	
			21	Shri K.P.Baby	0.1	
			Total Area	2.4		
139	Group :	KIZHAKKENCHERRY2	S.No	Farmer	Area	AEU
	Group Leader :	C.P.KUNJUMON	1	Mr. C.P.Kunjumon	0.5	22
	Regional Council :	VFPCCK	2	Mr. Jose.P.M	0.2	
	Village :	KIZHAKKENCHERI-II	3	Mr. Paulose	0.2	
	Sub district :	Alathur	4	Mr. T.O.Ousepunny	0.3	
	Block :	ALATHUR	5	Mr. V.C.Abraham	0.4	
	District :	PALAKKAD	6	Mr. V.C.Thomson	0.4	
	Registration NO :	LG0900003087	7	Mr. V.M.Sulaiman	0.5	
			Total Area	2.5		
140	Group :	KOLAYAD	S.No	Farmer	Area	AEU
	Group Leader :	SHYAMPRASAD P.V	1	Mr. Jose K	0.3	11
	Regional Council :	VFPCCK	2	Shri Mohanan P	0.2	
	Village :	KOLOYAD	3	Shri Ramesan M	0.2	
	Sub district :	Thalassery	4	Shri Ranjithkumar K P	0.2	
	Block :	PERAVOOR	5	Shri Shyamprasad P.V	1	
	District :	KANNUR		Total Area	1.9	
	Registration NO :	LG0900002008				

141	Group :	KOLLENGODE	S.No	Farmer	Area	AEU
	Group Leader :	SURESHKUMAR.B	1	Mr. Abdul Azeez.K	0.1	22
	Regional Council :	VFPCK	2	Mr. Abdul Kalam.K	0.1	
	Village :	KOLLENGODE-II	3	Mr. Chandran.M	0.1	
	Sub district :	Chittur	4	Mr. Chathukutty.R	0.1	
	Block :	KOLLENGODE	5	Mr. Chenthamarakshan	0.1	
	District :	PALAKKAD	6	Mr. Devadasan	0.1	
	Registration NO :	LG0900001643	7	Mr. Illias.M	0.1	
			8	Mr. Khaja	0.1	
			9	Mr. Krishnan.V	0.1	
			10	Mr. Muhammed Raffi	0.1	
			11	Mr. Murkukesan.C	0.1	
			12	Mr. Nagar Meeran	0.1	
			13	Mr. Narayanan	0.1	
			14	Mr. Rathnavalsalan.A	0.1	
			15	Mr. Satheeshkumar.N	0.1	
			16	Mr. Shithin.R	0.1	
			17	Mr. Sivakumaran.M	0.1	
			18	Mr. Sivaraman	0.1	
			19	Mr. Sukumaran.A	0.1	
			20	Mr. Sureshkumar.B	0.1	
			21	Mr. Vijayan.P	0.1	
			22	Ms. Sumithra	0.1	
			23	Shri Kannan	0.1	
			24	Shri Seydu Muhammed	0.1	
				Total Area	2.4	
142	Group :	KOTTAYAM	S.No	Farmer	Area	AEU
	Group Leader :	JOMY GEORGE	1	Mr. Alex Thomas	1.4	9
	Regional Council :	Manarcadu Social Service Society	2	Mr. Anil K Kurian	0.32	
	Village :	KANAKKARI	3	Mr. Biju Kurian	0.4	
	Sub district :	Meenachil	4	Mr. Deepu Thomas	0.4	
	Block :	KADUTHURUTHY	5	Mr. Dr. V. Alexander Raju	0.2	
	District :	KOTTAYAM	6	Mr. Jomy George	0.8	
	Registration NO :	LG0900001123	7	Mr. Joy Sebastian	0.2	
			8	Mr. Ligeesh K	0.4	
			9	Mr. M. K Thomas	0.4	
			10	Mr. M. K Varghese	0.34	
			11	Mr. P J James	2.2	
			12	Mr. Scaria Jacob	0.4	

		13	Mr. Siriyac Kurian	2	9
		14	Mr. Sunny Babu	1.6	
		15	Mr. Thomas Joseph	8	
		16	Mr. Thomas Varghese	1.2	
		17	Mrs. Rani Lalu	0.14	
		18	Mrs. Saimol Thomas	0.6	
		19	Mrs. Sanchu Thomas	0.7	
		20	Mrs. Sheena Susan Varghese	0.14	
		21	Mrs. Thankamma Kurian	0.2	
			Total Area	22.04	
143	Group : KOTTAYI	S.No	Farmer	Area	AEU
	Group Leader : C.V.KUTTAN	1	Mr. Aravindakshan.M.V	0.1	22
	Regional Council : VFPCCK	2	Mr. Gopalan.T.K	0.12	
	Village : KOTTAYI-I	3	Mr. Jose.N.I	0.1	
	Sub district : Alathur	4	Mr. Kuttan.C.V	0.24	
	Block : KUZHALMANNAM	5	Mr. Parthan.C	0.3	
	District : PALAKKAD	6	Mr. Rajakumaran.A	0.1	
	Registration NO : LG0900001670	7	Mr. Rajan.M.V	0.32	
		8	Mr. Ramakrishnan	0.4	
		9	Mr. Sivadas.P.V	0.1	
		10	Mr. Suresh.P.K	0.4	
		11	Mr. Unnikrishnan.M.P	0.1	
		12	Mr. Velayudhan	0.1	
		13	Mrs. Bindhu	0.1	
			Total Area	2.48	
144	Group : KOZHIKODE	S.No	Farmer	Area	AEU
	Group Leader : MINI SHAJU	1	Mr. Augustine K S	1.2	15
	Regional Council : Manarcadu Social Service Society	2	Mr. Devassia Devassia	4	
	Village : THIRUVAMBADI	3	Mr. George	1.67	
	Sub district : Kozhikode	4	Mr. John	0.73	
	Block : KOZHIKODE	5	Mr. Jopu John	2	
	District : KOZHIKODE	6	Mr. Jose K A	0.7	
	Registration NO : LG0900016415	7	Mr. Jose O J	0.92	
		8	Mr. Jose V K	0.6	
		9	Mr. Joseph N C	1.6	
		10	Mr. Jubin Dominic	1	
		11	Mr. Kuruvilla Joseph	2	
		12	Mr. Paulose	0.4	
		13	Mr. Sebastian	0.4	
		14	Mr. Sojan Jacob	0.8	

		15	Mr. Thomas K A	0.8	15
		16	Mr. Thomas K T	2	
		17	Mrs. Philomma Kuriakose	1.08	
		18	Shri Chacko P M	1	
		19	Shri Jomy M Mathew	1.6	
		20	Smt. Mini Shaju	0.8	
			Total Area	25.3	
145	Group : KOZHIMALA	S.No	Farmer	Area	AEU
	Group Leader : O.S DILEEP	1	Shri Babu B	0.1	14
	Regional Council : VFPCCK	2	Shri Bins John	0.1	
	Village : AYYAPPANCOIL	3	Shri Joseph Varkey	0.1	
	Sub district : Udumbanchola	4	Shri O.S Dileep	0.32	
	Block : KATTAPPANA	5	Shri Sasi	0.2	
	District : IDUKKI	6	Shri Sasikumar B	0.1	
	Registration NO : LG0900004003	7	Shri Shaji P	0.4	
			Total Area	1.32	
146	Group : KUDAKKACHIRA	S.No	Farmer	Area	AEU
	Group Leader : ABRAHAM JOSEPH	1	Shri Abraham Joseph	0.32	9
	Regional Council : VFPCCK	2	Shri I C Zachariah	0.12	
	Village : VALLICHIRA	3	Shri Jamison Thomas	0.12	
	Sub district : Meenachil	4	Shri Jose Thomas	0.12	
	Block : LALAM	5	Shri Joseph George	0.2	
	District : KOTTAYAM	6	Shri K M Agutine	0.12	
	Registration NO : LG0900003861	7	Shri Tomichan John	0.2	
		8	Shri Tony Mathew	0.12	
			Total Area	1.32	
147	Group : KULIRMA	S.No	Farmer	Area	AEU
	Group Leader : RAJESH KRISHNAN	1	Mr. Arun M	0.445	20
	Regional Council : Thanal	2	Mr. Rajesh	1.46	
	Village : THRISSILERY	3	Mr. Ranjith	1.62	
	Sub district : Mananthavady	4	Mrs. Uma	0.4	
	Block : MANANTHAVADY	5	Smt. Seema	0.647	
	District : WAYANAD	6	Smt. Vinod	1.007	
	Registration NO : LG0900002082		Total Area	5.579	
148	Group : KUNDAMAM	S.No	Farmer	Area	AEU
	Group Leader : MANIKANDAN NAIR N	1	Shri Ashish Kumar S K	1	12
	Regional Council : VFPCCK	2	Shri Madavan	0.25	
	Village : OTTASEKHARAMANG ALAM	3	Shri Manikandan Nair N	0.25	
	Sub district : Neyyattinkara	4	Shri Mohandas R	0.28	
	Block : PERUMKADAVILA	5	Shri Surendran P	0.25	
	District : TRIVANDRUM		Total Area	2.03	
	Registration NO : LG09000019286				

149	Group :	KUTTIPALA	S.No	Farmer	Area	AEU
	Group Leader :	PADMANABHAN V P	1	Mr. Abdul Bar	0.2	11
	Regional Council :	VFPCK	2	Mr. Prakasan T. K	0.12	
	Village :	KAKKAD	3	Mr. Saseendran A C	0.12	
	Sub district :	Kozhikode	4	Mr. Shanavas K	0.4	
	Block :	KUNNAMANGALAM	5	Shri Padmanabhan V P	0.2	
	District :	KOZHIKODE		Total Area	1.04	
	Registration NO :	LG0900001779				
150	Group :	KUTTOTH	S.No	Farmer	Area	AEU
	Group Leader :	SURESH KUMAR P.P.	1	Shri Damodaran Nair	0.6	2
	Regional Council :	VFPCK	2	Shri Kuniraman Nambyar Kp	0.7	
	Village :	CHERUVANNUR	3	Shri P. Bhaskaran	0.16	
	Sub district :	Quilandy	4	Shri Ramachandran Nair	0.3	
	Block :	PERAMBRA	5	Shri Suresh Kumar P.P.	0.8	
	District :	KOZHIKODE		Total Area	2.56	
Registration NO :	LG0900001746					
151	Group :	MADIKAI1	S.No.	Farmer	Area	AEU
	Group Leader :	THAMPAYI P	1	Shri Thambayi P	0.4	11
	Regional Council :	VFPCK	2	Smt. Devakip	0.08	
	Village :	MADIKAI	3	Smt. K Bhargavi	0.24	
	Sub district :	Hosdurg	4	Smt. Kalyani K V	0.3	
	Block :	KANHANGAD	5	Smt. Nandhini K	0.18	
	District :	KASARGOD		Total Area	1.2	
	Registration NO :	LG0900001317				
152	Group :	MADIKAI2	S.No	Farmer	Area	AEU
	Group Leader :	VALSALA V	1	Smt. Devaki K	0.3	11
	Regional Council :	VFPCK	2	Smt. Madhavi K	0.2	
	Village :	MADIKAI	3	Smt. Sarojini C	0.24	
	Sub district :	Hosdurg	4	Smt. Thambayi V	0.2	
	Block :	KANHANGAD	5	Smt. Valsala V	0.16	
	District :	KASARGOD		Total Area	1.1	
	Registration NO :	LG0900003013				
153	Group :	MADIKAI2	S.No	Farmer	Area	AEU
	Group Leader :	JOSEPH U J	1	Shri B Gangadharan	0.03	11
	Regional Council :	VFPCK	2	Shri Balakrishnan Nair	0.24	
	Village :	MADIKAI	3	Shri Joseph U J	0.6	
	Sub district :	Hosdurg	4	Shri Krishnan K	0.4	
	Block :	KANHANGAD	5	Shri Krishnan V	0.4	
	District :	KASARGOD		Total Area	1.67	
	Registration NO :	LG0900001324				

154	Group :	MADOLTHAZHEI	S.No	Farmer	Area	AEU
	Group Leader :	BEENA BABU	1	Smt. Beena	0.8	11
	Regional Council :	VFPCK	2	Smt. Beena	0.25	
	Village :	VELOM	3	Smt. Cheeru	0.25	
	Sub district :	Vadakara	4	Smt. Janu	0.25	
	Block :	KUNNUMMAL	5	Smt. Sarojini	0.2	
	District :	KOZHIKODE		Total Area	1.75	
Registration NO :	LG0900001762					
155	Group :	MANGALATHUNADA	S.No	Farmer	Area	AEU
	Group Leader :	AJIKUMAR K	1	Mrs. Kumari Shobha P G	0.4	9
	Regional Council :	VFPCK	2	Mrs. Laila	0.42	
	Village :	MELTHONNAKKAL	3	Mrs. Nisha	0.4	
	Sub district :	Thiruvananthapuram	4	Mrs. Prabhavati Amma	0.5	
	Block :	VAMANAPURAM	5	Shri Ajikumar K	1	
	District :	TRIVANDRUM		Total Area	2.72	
Registration NO :	LG0900003999					
156	Group :	MANIMALA	S.No	Farmer	Area	AEU
	Group Leader :	K.V ABRAHAM	1	Mr. Bijumon Kurian	0.2	9
	Regional Council :	Manarcadu Social Service Society	2	Mr. George Thomas	1.4	
	Village :	KANGAZHA	3	Mr. Ittyrachan George	2	
	Subdistrict :	Changanassery	4	Mr. John P Thomas	0.8	
	Block :	VAZHOOR	5	Mr. Jojo Joseph	2.4	
	District :	KOTTAYAM	6	Mr. K E George	1.6	
	Registration NO :	LG0900001150	7	Mr. K. V Abraham	1.2	
			8	Mr. Luciamma Joseph	0.4	
			9	Mr. P.A. Jose	4	
			10	Mr. Satheesh George	1.6	
			11	Mr. Sebastian Joseph	0.8	
			Total Area	16.4		
157	Group :	MANIYUR	S.No	Farmer	Area	AEU
	Group Leader :	A. SURJITH	1	Mr. Narayanan T	0.8	2
	Regional Council :	VFPCK	2	Mr. Sreelesh	0.4	
	Village :	MANIYUR	3	Mr. Suresh P	0.2	
	Sub district :	Vadakara	4	Shri A. Surjith	0.204	
	Block :	MELDAY	5	Shri Kunjiraman	0.1	
	District :	KOZHIKODE		Total Area	1.704	
Registration NO :	LG0900001744					
158	Group :	MARIYA SURABIKAVALA	S.No	Farmer	Area	AEU
	Group Leader :	MATHEW	1	Shri Baby Karimplackilpadavil	1.11	21
Regional Council :	Wayanad Social Service Society	2	Shri Brijith Moolakattu	1.84		

	Village :	PULPALLI	3	Shri Cherian Unnippallil (Anoop)	1.21	21
	Sub district :	Sulthanbathery	4	Shri Devasia Vallatt	1.19	
	Block :	SULTHAN BATHERY	5	Shri George Thekkinethu	0.4	
	District :	WAYANAD	6	Shri Joseph.M.U Moolakattu (President)	1	
	Registration NO :	LG0900001198	7	Shri M.D.Joseph Mannavelil	0.61	
			8	Shri Mathew Nirapputhottiyil	1.09	
			9	Shri Mathew Palarackal	4.05	
			10	Shri Mathew Unnippallil	2.02	
			11	Shri Paily Pezhumkattil	0.4	
			12	Shri Raju.M.A Mangattukunnel	0.61	
			13	Shri Sajan Jacob Kattattu	0.95	
			14	Shri Yacob Madeckal	0.61	
				Total Area	17.11	
159	Group :	MARUTHAYI	S.No	Farmer	Area	
	Group Leader :	DIVAKARAN K	1	Shri Divakaran K	0.20	11
	Regional Council :	VFPCCK	2	Shri Kunhiraman Adukkadan	0.20	
	Village :	MATTANNUR	3	Shri Mammootti K	0.20	
	Sub district :	Thalassery	4	Shri Sajeevan K	0.20	
	Block :	IRITTY	5	Shri Vinod K V	0.20	
	District :	KANNUR		Total Area	1.00	
	Registration NO :	LG0900003498				
160	Group :	MAVOOR	S.No	Farmer	Area	AEU
	Group Leader :	RADHAKRISHNAN.T	1	Shri Chandran M	0.652	11
	Regional Council :	VFPCCK	2	Shri M.Velayudhan Nair	0.56	
	Village :	MAVOOR	3	Shri Radhakrishnan.T	0.3	
	Sub district :	Kozhikode	4	Shri Raghavan	0.8	
	Block :	KUNNAMANGALAM	5	Shri Sreedaran E T	1.12	
	District :	KOZHIKODE		Total Area	3.432	
	Registration NO :	LG0900001747				
161	Group :	MITHRA	S.No	Farmer	Area	AEU
	Group Leader :	JOHNY N JOSEPH	1	Mr. Ajais John	1.2	12
	Regional Council :	VFPCCK	2	Mr. Baby Ks	0.35	
	Village :	KEERAMPARA	3	Mr. Eldho V Puravath	1.91	
	Sub district :	Kothamangalam	4	Mr. Johny N Joseph	1.3	
	Block :	KOTHAMANGALAM	5	Mr. K K Dany	1.8	
	District :	ERNAKULAM	6	Mr. K S Sathyavan	1	
	Registration NO :	LG0900005470	7	Mr. K V Abraham Kottackal	1.2	
			8	Mr. Mohanan Ks	1	
			9	Mr. Paulose Kuriakose	2.5	
			10	Mr. Sunil Paul	2	
				Total Area	14.26	

162	Group :	MOOCHAMKUNDU	S.No	Farmer	Area	AEU
	Group Leader :	SAKTHIVEL	1	Mr. Arul	0.2	23
	Regional Council :	VFPCCK	2	Mr. Chandrakumar	0.2	
	Village :	MUTHALAMADA-I	3	Mr. Chinnaswamy	0.2	
	Sub district :	Chittur	4	Mr. Dalapathy	0.2	
	Block :	KOLLENGODE	5	Mr. Duraiswamy.N	0.2	
	District :	PALAKKAD	6	Mr. Muruganandan	0.2	
	Registration NO :	LG0900001659	7	Mr. Rajaram.S	0.2	
			8	Mr. Rajendran	0.2	
			9	Mr. Sakthivel	0.2	
			10	Mr. Senthilkumar	0.2	
			11	Mr. Subramanyan	0.1	
			12	Mr. Thangavel.K	0.2	
			13	Mr. Thankavel.P.S	0.2	
			Total Area	2.5		
163	Group :	MOOKKANNOOR	S.No	Farmer	Area	AEU
	Group Leader :	RAJA.K	1	Mr. James K.S	0.2	9
	Regional Council :	VFPCCK	2	Mr. Jose K P	0.16	
	Village :	MOOKKANNOOR	3	Mr. Joseph P P	0.35	
	Sub district :	Aluva	4	Mr. M O Joy	0.2	
	Block :	ANGAMALI	5	Shri Paulose M D	0.2	
	District :	ERNAKULAM	6	Shri Raju. K	0.2	
	Registration NO :	LG0900003374	7	Shri Sukumaran M.K	0.16	
			8	Shri Varghese C P	0.2	
			Total Area	1.67		
164	Group :	MUKULAM	S.No	Farmer	Area	AEU
	Group Leader :	RAJEESH	1	Mr. Abdul Salam Vv	1.2	6
	Regional Council :	VFPCCK	2	Mr. Aboobacker	2	
	Village :	PONNANI	3	Mr. Haidru	0.6	
	Sub district :	Ponnani	4	Mr. Purushothaman	0.6	
	Block :	PONNANI	5	Mr. Rajeesh	3.2	
	District :	MALAPPURAM	6	Mr. Sreedharan K	1.68	
	Registration NO :	LG0900006238	7	Mr. Subrahmanyam	0.4	
			8	Mr. Viswanathan	0.4	
			9	Mrs. Dhamayandi	0.4	
			10	Mrs. Dhanya	0.4	
			11	Mrs. Kunjimalu	0.4	
			12	Mrs. Lalitha	0.6	
			13	Mrs. Shali Pradeep	0.4	
		14	Mrs. Vijaya	0.4		
			Total Area	12.68		

165	Group :	MUTTOMKADAVU	S.No	Farmer	Area	AEU
	Group Leader :	P.K.JOSE	1	Shri K.V.Varkey	0.4	11
	Regional Council :	VFPCCK	2	Shri P.K.Jose	0.2	
	Village :	MALOTH	3	Shri Thomas Mathew	0.4	
	Sub district :	Hosdurg	4	Shri Tomy.K.V	0.2	
	Block :	KANHANGAD	5	Shri V.S.Mathew	0.4	
	District :	KASARGOD	6	Smt. Anniamma Antony	0.4	
	Registration NO :	LG0900009799	7	Smt. Binu Thomas	0.2	
			8	Smt. Daisy Jose	0.3	
		9	Smt. Soosamma Thomas	0.2		
			Total Area	2.7		
166	Group :	NANMA	S.No	Farmer	Area	AEU
	Group Leader :	VARGHESE P J	1	Shri P D Thomas	0.28	10
	Regional Council :	VFPCCK	2	Shri Poulouse P A	0.28	
	Village :	THIRUMUKKULAM	3	Shri Santhosh P P	0.504	
	Sub district :	Mukundapuram	4	Shri Varghese P J	0.4	
	Block :	MALA	5	Shri Varghese P V	0.448	
	District :	THRISSUR		Total Area	1.912	
	Registration NO :	LG0900003148				
167	Group :	NANMA	S.No	Farmer	Area	AEU
	Group Leader :	RAVEENDRAN NAIR	1	Shri Chandran	0.1	8
	Regional Council :	VFPCCK	2	Shri N.Nagendran	0.1	
	Village :	KUNNATHUKAL	3	Shri R.Shaji	0.1	
	Sub district :	Neyyattinkara	4	Shri Rajamony	0.2	
	Block :	PERUMKADAVILA	5	Shri Raveendran Nair	0.1	
	District :	TRIVANDRUM	6	Shri S.Unni	0.1	
	Registration NO :	LG0900003957	7	Shri Subhaslal	0.1	
				Total Area	0.8	
168	Group :	NANMA (NOORANAD)	S.No	Farmer	Area	AEU
	Group Leader :	OP DIVAKARAN	1	Mr. Viswanadan Unnithan	0.16	3
	Regional Council :	VFPCCK	2	Mr. Op Divakaran	0.24	
	Village :	PALAMEL	3	Mr. Ramachandran Unnithan	0.32	
	Sub district :	Mavelikkara	4	Mr. Tn Krishnankutti	0.4	
	Block :	BHARANICAVU	5	Mrs. Shantha	0.2	
	District :	ALAPPUZHA		Total Area	1.32	
	Registration NO :	LG0900002853				
169	Group :	NANMA NAIRKUZHI	S.No	Farmer	Area	AEU
	Group Leader :	BABU P	1	Mr. Babu	0.12	11
	Regional Council :	VFPCCK	2	Mr. K P Sukumaran	0.08	
	Village :	POOLACODE	3	Shri Abdul Kareem	0.6	
	Sub district :	Kozhikode	4	Shri Gopalakrishnan Pk	0.08	
	Block :	KUNNAMANGALAM	5	Shri Sivadasan M	0.192	
	District :	KOZHIKODE		Total Area	1.072	
	Registration NO :	LG0900010970				

170	Group :	NAVAJYOTHI KATTIPOIL	S.No	Farmer	Area	AEU
	Group Leader :	K.SHYLENDRA KUMAR	1	Shri A.Satheesh Chandran	1	11
	Regional Council :	VFPCK	2	Shri K.Balakrishnan	0.74	
	Village :	KARINDALAM	3	Shri K.Prakashan	1	
	Sub district :	Hosdurg	4	Shri K.Shylendra Kumar	0.69	
	Block :	NILESHWAR	5	Shri K.Vijayakumar	1.68	
	District :	KASARGOD	6	Shri M.Lohithakshan	0.92	
	Registration NO :	LG0900007241	7	Shri Suresh.U	0.4	
				Total Area	6.43	
171	Group :	NAVAMI	S.No	Farmer	Area	AEU
	Group Leader :	VINITHA A	1	Miss. Priya Rs	0.2306	9
	Regional Council :	Thanal	2	Miss. Vinitha A	0.02	
	Village :	Thiruvananthapuram	3	Mr. Roshith Chandran	0.2804	
	Sub district :	Thiruvananthapuram	4	Mr. Sarath S	0.6232	
	Block :	THIRUVANANTHAPUR AM RURAL	5	Mr. Vikraman V	0.0485	
	District :	TRIVANDRUM		Total Area	1.2027	
	Registration NO :	LG0900019631				
172	Group :	NAVANEETHAM	S.No	Farmer	Area	AEU
	Group Leader :	SANGEETHA PRADEEP	1	Mr. Ramakrishnan M	0.2306	10
	Regional Council :	Thanal	2	Mr. Sankardas M	0.1821	
	Village :	ARANGOTTUKARA	3	Mr. Satheesh M	0.2913	
	Sub district :	Talappilly	4	Mr. Sethumadhavan	0.2306	
	Block :	WADAKKANCHERY	5	Shri Sangeetha	0.0809	
	District :	THRISSUR		Total Area	1.0155	
	Registration NO :	LG0900013079				
173	Group :	NEDUMKANDAM	S.No	Farmer	Area	AEU
	Group Leader :	P.E JOSE	1	Mr. Aprem	0.4	16
	Regional Council :	Manarcadu Social Service Society	2	Mr. Augustine	0.8	
	Village :	KALKOONTHAL	3	Mr. Augustine Devassia	1.2	
	Sub district :	Udumbanchola	4	Mr. Baiju Jose	0.8	
	Block :	NEDUMKANDOM	5	Mr. Benny George	0.8	
	District :	IDUKKI	6	Mr. Biju Cherian	0.7	
	Registration NO :	LG0900001115	7	Mr. Biju Damodharan	0.9	
			8	Mr. Chacko	1.44	
			9	Mr. Devasia Joseph	0.6	
			10	Mr. Dominic Joseph	2	
			11	Mr. Emmanuel Thomas	1.2	
			12	Mr. George	2.8	
			13	Mr. George Thomas	2.4	
		14	Mr. Gopalakrishanan Nair S	0.6		

	15	Mr. Jacob Chacko	1.6	16
	16	Mr. Jinil Francis	2	
	17	Mr. John	1.2	
	18	Mr. John Kuriyakose	0.4	
	19	Mr. Jojan Abraham	3.2	
	20	Mr. Jose George	0.8	
	21	Mr. Jose Dominic	0.8	
	22	Mr. Jose Joseph	0.8	
	23	Mr. Joseph	1.04	
	24	Mr. Joseph Devassia	2.8	
	25	Mr. Joseph Joseph	1.6	
	26	Mr. Joseph Mathew	2.8	
	27	Mr. Joseph P.U	0.8	
	28	Mr. Joseph Paulose	1.2	
	29	Mr. Joseph Varkey	1.2	
	30	Mr. K M Abraham	1.8	
	31	Mr. K.J Joseph	1.4	
	32	Mr. K.S Sudhakaran	0.8	
	33	Mr. Kurian John	0.8	
	34	Mr. Kurian Thomas	0.6	
	35	Mr. Kurian Thomas	0.6	
	36	Mr. Lalan	0.4	
	37	Mr. Madhavan	0.8	
	38	Mr. Mathai Mathai	2	
	39	Mr. P C Soman	0.8	
	40	Mr. P I John	1.8	
	41	Mr. P V Chacko	0.6	
	42	Mr. Philip K T	0.4	
	43	Mr. Philipose K J	2	
	44	Mr. Prince George	1.2	
	45	Mr. Rajan	1	
	46	Mr. Rajesh Abraham	1	
	47	Mr. Raveendran T R	1.8	
	48	Mr. Reji Joseph	4	
	49	Mr. Reji Joseph	0.6	
	50	Mr. Roy Antony	1.4	
	51	Mr. Sabu M.J	2	
	52	Mr. Saji Thomas	1.7	
	53	Mr. Sali Jose	1.88	
	54	Mr. Saneesh A.R.	0.6	
	55	Mr. Santhosh P.V.	2.8	
	56	Mr. Sebastian	1	

57	Mr. Sebastian	2.8	16
58	Mr. Sebastian	1	
59	Mr. Sebastian Joseph	2	
60	Mr. Shaji Joseph	2	
61	Mr. Shaju George	0.8	
62	Mr. Shiju K C	1	
63	Mr. Sibi Joseph	1.6	
64	Mr. Siby	0.8	
65	Mr. Siby Dominic	0.8	
66	Mr. Siby Jose	0.6	
67	Mr. Siju Thomas	1.16	
68	Mr. Soman N G	1	
69	Mr. Sorgee Chacko	1.6	
70	Mr. Thankappan	0.8	
71	Mr. Thomas Avira	0.4	
72	Mr. Thomas Joseph	1.4	
73	Mr. Thomas Mathew	0.2	
74	Mr. Thomas Philip	0.4	
75	Mr. Thomas T P	1.2	
76	Mr. Thomas Td	0.98	
77	Mr. Varghese	2	
78	Mr. Varghese Abraham	1.2	
79	Mr. Vijayakumar	2.8	
80	Mr. Vincent	0.92	
81	Mr. Vinojkumar P.K	2.4	
82	Mrs. Alphonsa	1	
83	Mrs. Anjana K Rajam	0.4	
84	Mrs. Elsamma Isidor	0.8	
85	Mrs. Gincy	1	
86	Mrs. Lizhamma Joseph	1.2	
87	Mrs. Rittu Siby	0.4	
88	Mrs. Sajini Vinod	1	
89	Mrs. Shanty	0.2	
90	Mrs. Sobhana Murali	0.2	
91	Mrs. Thressiamma	0.5	
92	Shri Joy Xaviour	2.8	
93	Shri Kumaradas	1.4	
94	Shri Noble George	0.8	
95	Shri P.E Jose	0.82	
96	Smt. Thilakam Madhavan	0.8	
	Total Area	119.84	

174	Group :	NEDUMPANA	S.No	Farmer	Area	AEU
	Group Leader :	MOHANAN PILLAI	1	Shri Abdul Basheer.E	1	12
	Regional Council :	VFPCK	2	Shri Gopalakrishna Pillai	1	
	Village :	ANCHAL	3	Shri Gopinathan Pillai	1	
	Sub district :	Pathanapuram	4	Shri Mohanan Pillai	1	
	Block :	MUKHATHALA	5	Shri Nalinakshan	1	
	District :	KOLLAM	6	Shri Noushad.M	1	
	Registration NO :	LG0900005843	7	Shri Ramachandra Kurup	1	
			8	Shri Raveendran.B	1	
			9	Shri Thankappan Pillai.M	1	
			10	Shri Vijayanadhan Pillai	1	
				Total Area	10	
175	Group :	NEDUNGAPRA I	S.No	Farmer	Area	AEU
	Group Leader :	T.T.ULAHANNAN	1	Mr. C.K.Abraham	0.2	12
	Regional Council :	VFPCK	2	Mr. C.K.Eldo	0.1	
	Village :	VENGOOR	3	Mr. Jose A. Paul	0.2	
	Sub district :	Kunnathunad	4	Mr. Joshi .K.G	0.2	
	Block :	KOOVAPPADY	5	Mr. K.M.Joseph	0.2	
	District :	ERNAKULAM	6	Mr. T.T.Ulahannan	0.16	
	Registration NO :	LG0900004143		Total Area	1.06	
176	Group :	NEDUVATHOOR	S.No	Farmer	Area	AEU
	Group Leader :	SANTHOSH.G	1	Shri Gopakumar.C	0.3	9
	Regional Council :	VFPCK	2	Shri Rajan Pillai	1	
	Village :	NEDUVATHOOR	3	Shri Rajappan Achari	1	
	Sub district :	Kottarakkara	4	Shri Santhosh.G	1	
	Block :	KOTTARAKKARA	5	Shri Thulaseedharan Pillai.G	0.12	
	District :	KOLLAM		Total Area	3.42	
	Registration NO :	LG0900001718				
177	Group :	NERIAMANGALAM	S.No	Farmer	Area	AEU
	Group Leader :	P.M JOSEPH	1	Mr. Joseph	0.8	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. A.R Francis	1.6	
	Village :	NERIAMANGALAM	3	Mr. Abraham M.V	0.4	
	Sub district :	Kothamangalam	4	Mr. Abraham N U	0.5	
	Block :	KOTHAMANGALAM	5	Mr. Aneesh Narayanan	1	
	District :	ERNAKULAM	6	Mr. Antony Ouseph	1.6	
	Registration NO :	LG0900001147	7	Mr. Antony T.J	0.44	
			8	Mr. Augusthy Augusty	1.6	
			9	Mr. Babu Kurian	1	
			10	Mr. Babu Thomas	0.4	
			11	Mr. Baby Joseph	0.4	
			12	Mr. Baby Mathai	1.2	
			13	Mr. Baby Paul	2	

	14	Mr. Baby Varkey	1.2	14
	15	Mr. Baby Yacoob	0.4	
	16	Mr. Biju K. Kumaran	0.4	
	17	Mr. Biju K.Kumaran	0.4	
	18	Mr. Biju P.R	1.2	
	19	Mr. Bijumon Varghese	1.6	
	20	Mr. C.J Chacko	0.8	
	21	Mr. C.S Eldhose	2	
	22	Mr. C.T Vijayan	1.2	
	23	Mr. Chacko Joseph	0.6	
	24	Mr. Chacko K	0.4	
	25	Mr. Chacko Thomas	0.4	
	26	Mr. Chacko Xaviour	2	
	27	Mr. Cyriac Kuruvilla	1.4	
	28	Mr. Daniel Paul	0.75	
	29	Mr. Dinto George	0.8	
	30	Mr. E.V Mathew	1	
	31	Mr. Eldhos Joseph	0.34	
	32	Mr. Elias C. E	0.8	
	33	Mr. Elias Kuriakose	0.8	
	34	Mr. Francis V George	0.6	
	35	Mr. George John	0.4	
	36	Mr. George N Joseph	2	
	37	Mr. George P.J	0.4	
	38	Mr. Gopi P.V	0.4	
	39	Mr. Hamsa P.P	0.8	
	40	Mr. James Joseph	0.4	
	41	Mr. Joby Varghese	0.6	
	42	Mr. Jomon Antony	1	
	43	Mr. Jose	0.16	
	44	Mr. Jose Mathew	0.8	
	45	Mr. Jose Mathew	2.4	
	46	Mr. Jose T.K	1.2	
	47	Mr. Joseph Mathai	1.6	
	48	Mr. Joseph Varkey	0.4	
	49	Mr. Joy Thomas	0.8	
	50	Mr. K J Mathew	0.41	
	51	Mr. K J Vincent	1.38	
	52	Mr. K K Thomas	0.8	
	53	Mr. K M Korachan	0.88	
	54	Mr. K O Pathros	0.23	
	55	Mr. K.C James	1	

	56	Mr. K.K Dileep Kumar	0.8	14
	57	Mr. K.V George	0.4	
	58	Mr. K.V George	0.8	
	59	Mr. K.V Varghese	1.1	
	60	Mr. Karunakaran	1	
	61	Mr. Kochukunju	1.2	
	62	Mr. Kunjumon Baby	2	
	63	Mr. Kuriakose	1	
	64	Mr. Kurian K.K	2.2	
	65	Mr. Lalan K.A	1.2	
	66	Mr. M I Jose	0.48	
	67	Mr. M.A Baby	0.4	
	68	Mr. M.V Kuriakose	0.6	
	69	Mr. Maman Scaria	0.4	
	70	Mr. Maman Scariah	0.6	
	71	Mr. Mani Ousep	0.8	
	72	Mr. Manoharan	0.4	
	73	Mr. Martins	0.6	
	74	Mr. Mathew George	0.5	
	75	Mr. Mathew George	0.4	
	76	Mr. Mathew Joseph	0.8	
	77	Mr. Mathew Joseph	0.22	
	78	Mr. Mathew Paul	1.6	
	79	Mr. Mohanan C.R	0.6	
	80	Mr. Muraleedharan	1.4	
	81	Mr. N.M Jose	0.6	
	82	Mr. O U Eldhose	0.8	
	83	Mr. O.V Kuriakose	1.2	
	84	Mr. P.K Joseph	1.2	
	85	Mr. P.M Gangadharan	0.56	
	86	Mr. P.M George	0.8	
	87	Mr. P.M George	0.8	
	88	Mr. P.M Joseph	0.8	
	89	Mr. P.P Elias	0.3	
	90	Mr. P.P Mathew	0.8	
	91	Mr. P.U Paulose	0.4	
	92	Mr. Paily George	0.5	
	93	Mr. Paul Varghese	1.2	
	94	Mr. Paulose Mathai	1.6	
	95	Mr. Paulose Paulose.	0.4	
	96	Mr. Pradeep Ayyappan	2	
	97	Mr. Rakesh	0.6	

	98	Mr. Sabu M Issac	0.24	
	99	Mr. Santhosh Krishnan	0.6	14
	100	Mr. Santhosh M	1.2	
	101	Mr. Sasi Narayan	0.8	
	102	Mr. Sasi Narayan (Koothunkal)	0.6	
	103	Mr. Sasi P.S	1.6	
	104	Mr. Scariah Scariah	0.8	
	105	Mr. Sebastian	1.44	
	106	Mr. Sekharan Krishnan	0.4	
	107	Mr. Shaijan Thomas	2	
	108	Mr. Shaji Joseph	0.8	
	109	Mr. Shaji Mathew	0.8	
	110	Mr. Shaji Mathew	1.05	
	111	Mr. Shaju K Paul	1.34	
	112	Mr. Shiju John	0.4	
	113	Mr. Siby Joseph	3	
	114	Mr. Siby Mathew	1.4	
	115	Mr. Siji Mathew	1	
	116	Mr. Sinkumon Varghese	1.6	
	117	Mr. Sivan Raman	0.4	
	118	Mr. Somaraj M.U	0.5	
	119	Mr. Sudharsan Krishnan	0.4	
	120	Mr. Sunil Syriac	0.4	
	121	Mr. Sunny Varkey	0.8	
	122	Mr. Thomas Abraham	1	
	123	Mr. Thomas Jacob	0.8	
	124	Mr. Thomas Joseph	0.6	
	125	Mr. Thomas N Joseph	0.88	
	126	Mr. Unnikrishnan Vasu	0.4	
	127	Mr. V.D John	1.6	
	128	Mr. V.M Chacko	0.4	
	129	Mr. V.U Thomas	1	
	130	Mr. Varkey P.K	0.52	
	131	Mr. Velayudhan	0.6	
	132	Mr. Vijayan M.U	0.64	
	133	Mr. Vijayan P.S	1.6	
	134	Mr. Vijayan Ragavan	1.6	
	135	Mr. Vijayan T K	0.6	
	136	Mr. Viswambaran K.N	0.4	
	137	Mr. Wilson A.P	0.7	
	138	Mr. Xavier Joseph	0.60	
	139	Mrs. Eliyamma Varkey	1	

			140	Mrs. Lailamma Thomas	1	
			141	Mrs. Mary Boban	0.6	14
			142	Mrs. Mary Jose	0.4	
			143	Mrs. Mary Mathew	0.6	
			144	Mrs. Mary Varghese	0.4	
			145	Mrs. Molly Peter	1	
			146	Mrs. Omana Johny	1.2	
			147	Mrs. Savithri Vikraman	0.2	
			148	Mrs. Solly Shaji	2	
			149	Shri Karunakaran T.N	1.2	
			150	Shri Kuruvilla Kuriakose	1	
				Total Area	134.308	
178	Group :	NETTITHOZHU	S.No	Farmer	Area	AEU
	Group Leader :	P.M KURIAKOSE	1	Mr. Abraham Mathew	1.6	
	Regional Council :	Manarcadu Social Service Society	2	Mr. Abraham Marcos(Achan)	0.6	
	Village :	ANAKKARA	3	Mr. Abraham Varkey	0.92	16
	Sub district :	Udumbanchola	4	Mr. Antony Lukose (Appachan)	0.4	
	Block :	KATTAPPANA	5	Mr. C K Jacob Panikar	0.9	
	District :	IDUKKI	6	Mr. Chacko Varghese	0.77	
	Registration NO :	LG0900001148	7	Mr. Cherian Kuriyakose	0.94	
			8	Mr. Devassia Varghese	0.6	
			9	Mr. George Kuriyakose	1.33	
			10	Mr. George P G	1.2	
			11	Mr. Harikumar Prabhakaran	0.5	
			12	Mr. Isidore Mani	1.54	
			13	Mr. Jacob John	1	
			14	Mr. Johnson Mathew	2.4	
			15	Mr. Jose Jacob	1.26	
			16	Mr. Joseph Chacko	1.5	
			17	Mr. Joseph Kurian	1.4	
			18	Mr. Joseph Mathew	1.3	
			19	Mr. Joseph Mathew	1.4	
			20	Mr. Joseph Thomas	0.72	
			21	Mr. K A Joseph	2.8	
			22	Mr. K C Varkey	0.59	
			23	Mr. K J Joseph	0.4	
			24	Mr. Kunjumon George	0.4	
			25	Mr. Kurian V V	0.48	
			26	Mr. Liju Abraham	0.8	
			27	Mr. M D Joseph	2	

			28	Mr. M I Mathew	0.64	16
			29	Mr. M I Sunny	0.48	
			30	Mr. Mathew Abraham	1.5	
			31	Mr. N.E Joseph	1	
			32	Mr. P K Ulahannan	0.89	
			33	Mr. P M Kuriyakose	1.4	
			34	Mr. Prasad Kumar V C	0.8	
			35	Mr. Rajesh Kumar K P	0.4	
			36	Mr. Reji C J	0.43	
			37	Mr. Sabu N.N	0.60	
			38	Mr. Shaji Joseph	0.5	
			39	Mr. Shijo Antony	0.91	
			40	Mr. Sobin Joseph	0.8	
			41	Mr. Soy Joseph	0.4	
			42	Mr. Sunny Joseph	0.16	
			43	Mr. Sunny M T	0.3	
			44	Mr. T.M. Gopakumar	0.50	
			45	Mr. V A Varkey	0.2	
			46	Mr. V C Thomas	0.8	
			47	Mr. V P Ramachandran	1.12	
			48	Mr. V V Varghese	0.8	
			49	Mr. V.K Joseph	0.48	
			50	Mrs. Eliyamma John	0.9	
			51	Mrs. Leelamma George	1.2	
			52	Mrs. Sosamma Ulahannan	0.8	
			53	Mrs. Thressiamma Joseph	0.9	
				Total Area	48.682	
179	Group : NEYYATTINKARA	S.No	Farmer	Area	AEU	
	Group Leader : SIVAKUMAR.K	1	Mr. Christudas.N	0.1	8	
	Regional Council : VFPCCK	2	Mr. Nelson.K	0.1		
	Village : THIRUPURAM	3	Mr. Noble.R	0.1		
	Sub district : Neyyattinkara	4	Mr. Shiny Praveen	0.1		
	Block : ATHIYANNOOR	5	Mr. Sivakumar.K	0.1		
	District : TRIVANDRUM	6	Mr. Sreekumar.S	0.1		
	Registration NO : LG0900002850	7	Mr. Viswambharan	0.1		
		8	Ms. Veena	0.1		
		9	Smt. Baby.R	0.1		
			Total Area	0.9		
180	Group : NIRAV(Tamarakulam)	S.No	Farmer	Area	AEU	
	Group Leader : BALAN	1	Mr. Balan	0.8	3	
	Regional Council : VFPCCK	2	Mr. Bhargavan Nair	0.6		
	Village : THAMARAKKULAM	3	Mr. Prasannan	0.4		
	Sub district : Mavelikkara	4	Mr. Rajan R	0.24		

	Block : BHARANICAVU District : ALAPPUZHA Registration NO : LG0900002550	5	Mrs. Kala Devarajan Total Area	0.2 2.24	3
181	Group : NIRAVU Group Leader : JYOTHISH. T. KARIKKATTIL Regional Council : VFPCCK Village : KOLLAMULA Sub district : Ranni Block : RANNI District : PATHANAMTHITTA Registration NO : LG0900002065	S.No 1 2 3 4 5 6	Farmer Shri Anandhan P. K Shri Chacko M. C Shri Johnson Mathew Shri Jyothish. T. Karikkattil Shri Mathew Chacko Shri Raju. P Total Area	Area 0.2 0.2 0.06 0.2 0.1 0.2 0.96	AEU 12
182	Group : NIRMAL HARITHA Group Leader : BIJU Regional Council : VFPCCK Village : KATTAPPANA Sub district : Udumbanchola Block : KATTAPPANA District : IDUKKI Registration NO : LG0900004386	S.No 1 2 3 4 5 6 7	Farmer Shri Augustine Shri Benny Kurian Shri Biju Francis Shri Sasidharan K K Shri T S Abhayakumar Shri Thomas Shri Xaviour Total Area	Area 0.2 0.4 0.4 0.4 0.6 0.1 0.4 2.5	AEU 16
183	Group : NISHAGANDHI BALAL Group Leader : THOMAS THARISSIL Regional Council : VFPCCK Village : MALOTH Sub district : Hosdurg Block : NILESHWAR District : KASARGOD Registration NO : LG0900006032	S.No 1 2 3 4 5	Farmer Shri Baby.K.P Shri Joy Thomas Shri Thomas Tharissil Smt. Daisy Smt. Thambai Total Area	Area 0.36 0.2 0.51 0.2 0.2 1.47	AEU 11
184	Group : NOORANAD Group Leader : N BHASKARAN Regional Council : VFPCCK Village : NOORNAD Sub district : Mavelikkara Block : BHARANICAVU District : ALAPPUZHA Registration NO : LG0900002070	S.No 1 2 3 4 5 6 7	Farmer Mr. Cg Abraham Mr. Chandran Nair Mr. N Bhaskaran Mr. P Basheer Kutty Mr. P Vishwanadan Mr. Shahul Hameed Mr. Subhash Total Area	Area 0.58 0.12 0.56 0.04 0.16 0.08 0.2 1.748	AEU 3

185	Group :	Ofs Kattapana Kissan Maitreya Group	S.No	Farmer	Area	AEU
	Group Leader :	A P NINAN	1	Mr. A M Philipose	0.8	16
	Regional Council :	ORGANIC FARMING SOCIETY	2	Mr. A P Ninan	2.42	
	Village :	CHAKKUPALLAM	3	Mr. C V Mathukutty	6	
	Sub district :	Udumbanchola	4	Mr. Chacko Mani	4	
	Block :	KATTAPPANA	5	Mr. Joju	2	
	District :	IDUKKI	6	Mr. Jose Varghese	4	
	Registration NO :	LG0900009836	7	Mr. Joseph	1.58	
			8	Mr. P John Ninan	11.14	
			9	Mr. Shaji	1.6	
			10	Mr. Sunny P John	0.8	
			11	Mrs. Shibi	1	
			Total Area	35.34		
186	Group :	OORVARA	S.No	Farmer	Area	AEU
	Group Leader :	HEERA S D	1	Mr. Kiran J	0.24	8
	Regional Council :	Thanal	2	Mr. Mohanan	1.01	
	Village :	KULATHOOR	3	Mr. Mohanan	0.40	
	Sub district :	Neyyattinkara	4	Mr. Nesan	0.40	
	Block :	PERUMKADAVILA	5	Mr. Nithin J	0.40	
	District :	TRIVANDRUM	6	Mr. Rakhil	0.20	
	Registration NO :	LG0900017733	7	Shri Heera S	0.30	
			Total Area	2.97		
187	Group :	ORGANIC	S.No	Farmer	Area	AEU
	Group Leader :	SATISH KUMAR	1	Mr. K.V.Abdul Salam	0.1	12
	Regional Council :	VFPCK	2	Mr. Rahul.R	0.2	
	Village :	VELLANAD	3	Mrs. Sarojam,P	0.16	
	Sub district :	Nedumangad	4	Shri Satish	0.16	
	Block :	VELLANAD	5	Shri Sivanandan	0.18	
	District :	TRIVANDRUM		Total Area	0.8	
	Registration NO :	LG0900002679				
188	Group :	OTTEMALAM	S.No	Farmer	Area	AEU
	Group Leader :	BIJU JOSEPH	1	Shri A.S.Kurian	0.4	11
	Regional Council :	VFPCK	2	Shri Biju Joseph	0.4	
	Village :	MALOTH	3	Shri Sivadasan.K.V.	0.2	
	Sub district :	Hosdurg	4	Shri Vince	0.22	
	Block :	KANHANGAD	5	Smt. Mini	0.4	
	District :	KASARGOD	6	Smt. Ressay Biju	0.4	
	Registration NO :	LG0900010937		Total Area	2.02	

189	Group :	PALAKUNNU	S.No	Farmer	Area	AEU
	Group Leader :	ANILDEV V L	1	Miss. Asha S	0.04	1
	Regional Council :	Thanal	2	Miss. Beena S	0.12	
	Village :	SARKARA- CHIRAYINKEEZHU	3	Miss. Soumya A	0.04	
	Sub district :	Chirayinkeezhu	4	Mr. Anildev V L	0.42	
	Block :	CHIRAYINKEEZHU	5	Mr. Sreejith A	0.44	
	District :	TRIVANDRUM	6	Ms. Sheeja	0.04	
	Registration NO :	LG0900019678		Total Area	1.12	
190	Group :	PALLIKKARA 1	S.No	Farmer	Area	
	Group Leader :	MOHANAN NAIR.M	1	Shri Lohithakshan Nair	1.18	7
	Regional Council :	VFPCCK	2	Shri M.Balakrishnan	0.6	
	Village :	PALLIKKARA	3	Shri Mohanan Nair.M	0.64	
	Sub district :	Hosdurg	4	Shri P.Balakrishnan	0.42	
	Block :	KANHANGAD	5	Shri T.Kumaran Nair	0.88	
	District :	KASARGOD		Total Area	3.72	
	Registration NO :	LG0900005369				
191	Group :	PAPPANCHANI	S.No	Farmer	Area	
	Group Leader :	MOHANRAJ K	1	Mr. Bhaskakan K	0.4	8
	Regional Council :	VFPCCK	2	Mr. Johnson D	0.1	
	Village :	KALLIYOOR	3	Mr. Rejikumar K	0.14	
	Sub district :	Thiruvananthapuram	4	Shri Mohanraj	0.2	
	Block :	NEMOM	5	Shri Ravi	0.2	
	District :	TRIVANDRUM		Total Area	1.04	
	Registration NO :	LG0900004069				
192	Group :	PARATHODUI	S.No	Farmer	Area	
	Group Leader :	RENJIT P MATHEW	1	Shri A J Thomas	0.4	12
	Regional Council :	VFPCCK	2	Shri Joseph Joseph	0.1	
	Village :	EDAKKUNNAM	3	Shri Joseph M	0.3	
	Sub district :	Kanjirappally	4	Shri M J Kuriakose	0.8	
	Block :	KANJIRAPPALLY	5	Shri M J Thomas	0.1	
	District :	KOTTAYAM	6	Shri P K Devassia	0.1	
	Registration NO :	LG0900003962	7	Shri Renjit P Mathew	0.2	
			Total Area	2		
193	Group :	PATTAYAKUDY	S.No	Farmer	Area	AEU
	Group Leader :	P G GEORGE	1	Shri Binoy Iype	0.2	12
	Regional Council :	VFPCCK	2	Shri Geojo P Ninan	0.2	
	Village :	VANNAPURAM	3	Shri Gigi George	0.2	
	Sub district :	Thodupuzha	4	Shri Jaimon George	0.4	
	Block :	ELEMDESAM	5	Shri James P George	0.2	
	District :	IDUKKI	6	Shri P G George	0.2	
	Registration NO :	LG0900003479	7	Shri Salimon	0.4	
			Total Area	1.8		

194	Group :	PERAVOOR	S.No	Farmer	Area	AEU
	Group Leader :	SASEENDRAN V. K	1	Shri Baburajan V K	0.2	13
	Regional Council :	VFPCK	2	Shri Purushothaman C	0.2	
	Village :	MANATHANA	3	Shri Saseendran V.	0.2	
	Sub district :	Thalassery	4	Smt. Aleyamma	0.2	
	Block :	PERAVOOR	5	Smt. Kausu	0.2	
	District :	KANNUR		Total Area	1	
Registration NO :	LG0900002005					
195	Group :	PERUMATTY	S.No	Farmer	Area	AEU
	Group Leader :	PRABHAKARAN.V	1	Mr. Ashiq	0.2	23
	Regional Council :	VFPCK	2	Mr. Bhagavaldas	0.1	
	Village :	MOOLATHARA	3	Mr. Chamu.K	0.1	
	Sub district :	Chittur	4	Mr. Kesavan	0.1	
	Block :	CHITTUR	5	Mr. Krishnanunni.K	0.2	
	District :	PALAKKAD	6	Mr. Manikumar	0.2	
	Registration NO :	LG0900001697	7	Mr. Mohandas	0.1	
			8	Mr. Nachimuthu	0.2	
			9	Mr. Prabhakaran.R	0.1	
			10	Mr. Prabhakaran.V	0.2	
			11	Mr. Rajan.S	0.2	
			12	Mr. Sahadevan.V	0.2	
			13	Mr. Sakthivel	0.3	
			14	Mr. Sudhakaran.C	0.2	
			15	Mrs. Radhadevi	0.1	
		16	Mrs. Suguna	0.1		
			Total Area	2.6		
196	Group :	PERUMATTY 2	S.No	Farmer	Area	AEU
	Group Leader :	JAYACHANDRAN	1	Mr. Baskaran	0.2	23
	Regional Council :	VFPCK	2	Mr. Jayachandran.S	0.2	
	Village :	PERUMATTY	3	Mr. Mohanan.M	0.1	
	Sub district :	Chittur	4	Mr. Narayanankutty	0.1	
	Block :	CHITTUR	5	Mr. Pradeepkumar.K.P	0.2	
	District :	PALAKKAD	6	Mr. Prijithkumar.M.M	0.3	
	Registration NO :	LG0900001714	7	Mr. Pushkaran.S	0.1	
			8	Mr. Sadanandan	0.2	
			9	Mr. Sadasivan.M	0.1	
			10	Mr. Salprakash.R	0.2	
			11	Mr. Santhakumar.M	0.1	
			12	Mr. Sujeesh.S	0.1	
			13	Mr. Surendran.K	0.1	
			14	Mr. Sureshbabu	0.1	
			15	Mr. Velukutty	0.2	
			16	Mr. Vijayan.R	0.1	
		17	Ms. Radha.G	0.1		
			Total Area	2.5		

197	Group :	PERUVANTHANAM	S.No	Farmer	Area	AEU
	Group Leader :	K.J SCARIAH	1	Mr. A B Gopinathan	1.85	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. Abraham Devassia	2	
	Village :	PERUVANTHANAM	3	Mr. Abraham Thomas	1.4	
	Sub district :	Peerumade	4	Mr. Ajay Mathew	0.764	
	Block :	AZHUTHA	5	Mr. Alex Cheriyan	0.8	
	District :	IDUKKI	6	Mr. Alex Thomas	1.6	
	Registration NO :	LG0900001128	7	Mr. Antony Joseph	0.4	
			8	Mr. Balakrishnan Nair	0.6	
			9	Mr. Berly Joseph	1.4	
			10	Mr. C M Devassia	0.4	
			11	Mr. C T Mathew	0.8	
			12	Mr. C V Chacko	1	
			13	Mr. Chacko Kurian	3.168	
			14	Mr. Chandikunju Joseph	0.8	
			15	Mr. Charly Joseph	1.4	
			16	Mr. D Joseph	0.4	
			17	Mr. Devassia Joseph	1.2	
			18	Mr. George Joseph	0.3	
			19	Mr. Georgekutty	1.74	
			20	Mr. James Augusty	2.088	
			21	Mr. Joby	2.4	
			22	Mr. Jojo Abraham	2.4	
			23	Mr. Jomon Joseph	3.2	
			24	Mr. Jose	0.8	
			25	Mr. Jose Antony	0.4	
			26	Mr. Jose Joseph	2	
			27	Mr. Jose Joseph	0.4	
			28	Mr. Jose K Joseph	0.6	
			29	Mr. Jose Michle	0.4	
			30	Mr. Jose Thomas	1	
			31	Mr. Joseph Augusthy	2.4	
			32	Mr. Joseph Chandy	0.8	
			33	Mr. Joseph Karakkaad	0.528	
			34	Mr. Joseph Scariah	1.2	
			35	Mr. Joseph Sebastian	1.8	
			36	Mr. Joy Lookka	1.2	
			37	Mr. Joy Mathew	0.4	
			38	Mr. K J Azeez	0.8	
			39	Mr. K J Scariah	2.4	
			40	Mr. K J Sebastian	0.56	
			41	Mr. K K Sebastain	2	
			42	Mr. K.C Emmanuel	0.6	

	43	Mr. K.J Joseph	0.56	14
	44	Mr. K.J Thomas	1.6	
	45	Mr. K.T Thomas	1.6	
	46	Mr. K.V Joseph	1.9	
	47	Mr. M J John	1.8	
	48	Mr. M J Joseph	0.4	
	49	Mr. M S Gopinathan	1.6	
	50	Mr. M.D Joseph	1.6	
	51	Mr. Mathew Joseph	1.8	
	52	Mr. Mathew Mathai	0.4	
	53	Mr. Mathew Abraham	0.4	
	54	Mr. Mathew Devassia	1.4	
	55	Mr. Mathew Philip	1.6	
	56	Mr. Mathew T M	0.8	
	57	Mr. Noble Joseph	0.8	
	58	Mr. P C Chandy	0.4	
	59	Mr. P M Joseph	0.2	
	60	Mr. P.J Joseph	0.8	
	61	Mr. Ratheeshmon C R	0.4	
	62	Mr. Roy	0.1	
	63	Mr. Roy Chacko	1.2	
	64	Mr. Saji Chacko	2	
	65	Mr. Satheesan Nair	0.2	
	66	Mr. Shaji	0.6	
	67	Mr. Shaji P George	1	
	68	Mr. Sibi Thomas	1	
	69	Mr. Siby Thomas	0.5	
	70	Mr. Suby Alex	0.33	
	71	Mr. Sunny Mathew	1.38	
	72	Mr. T V Varghese	0.6	
	73	Mr. Thomas Thomas	2	
	74	Mr. Thomas Varghese	1	
	75	Mr. Tomy Joseph	1.2	
	76	Mr. Tony C Joseph	2.8	
	77	Mr. V C Cheriyan	1.2	
	78	Mr. V C Devassia	0.8	
	79	Mrs. Dimple James	1.2	
	80	Mrs. Eliamma James	0.8	
	81	Mrs. Gracy Abraham	0.56	
	82	Mrs. Marykutty Joseph	1.2	
		Total Area	94.13	

198	Group :	PERUVAZHAKADAVU	S.No	Farmer	Area	AEU
	Group Leader :	SIVASANKARAN T.M.	1	Mr. P M Gangadharan	0.12	11
	Regional Council :	VFPCCK	2	Mr. Shinod Kumar	0.3	
	Village :	KUNNAMANGALAM	3	Mr. Sreedaran M P	0.2	
	Sub district :	Kozhikode	4	Mr. Vinodkumar	0.2	
	Block :	KUNNAMANGALAM	5	Shri Sivasankaran T.M.	0.24	
	District :	KOZHICODE		Total Area	1.06	
Registration NO :	LG0900001777					
199	Group :	PGS MARANALLOOR BALARAMAPURAM	S.No	Farmer	Area	AEU
	Group Leader :	RUBAI.M	1	Shri Ayyappan	0.4	8
	Regional Council :	VFPCCK	2	Shri P Krishnan	0.6	
	Village :	MARANALLOOR	3	Shri Rubai.M	0.2	
	Sub district :	Neyyattinkara	4	Shri Sukumarannair.P	0.2	
	Block :	NEMOM	5	Smt. Sayinty Saroj. RI	0.1	
	District :	TRIVANDRUM		Total Area	1.5	
Registration NO :	LG0900002347					
200	Group :	PHALADA	S.No	Farmer	Area	AEU
	Group Leader :	KASARAGOD TALUK ORGANIC FARMERS GROUP JAYADEVA KANDIGE	1	Miss. Ramavathi.S.V.Bhat	0.74	11
	Regional Council :	Phaladaayi Foundation	2	Mr. A.Sri Krishna Bhat	1.38	
	Village :	NIRCHAL	3	Mr. Bhima Bhat	1.62	
	Sub district :	Kasaragod	4	Mr. Chandrashekara Bhat	3.85	
	Block :	KASARGOD	5	Mr. Ganapathi Bhat Kunderi	1.46	
	District :	KASARGOD	6	Mr. Gopalakrishna Bhat	2.28	
	Registration NO :	LG0900013460	7	Mr. Jayantha Nayak	4.75	
			8	Mr. K.Ganapathi Bhat	10	
			9	Mr. K.Narashima Bhat	4.04	
			10	Mr. K.Vasudev Nayak	0.97	
			11	Mr. K. Vishnu Bhat	1.21	
			12	Mr. Karwaje Krishna Bhat	1.13	
			13	Mr. Keshav Bhat	2.52	
			14	Mr. Krishna Baht Kuruveri	6.61	
			15	Mr. Krishna.K.Nayak	7	
			16	Mr. M.Krishna Kumar	9	
			17	Mr. M.Narayana Bhat	2.02	
			18	Mr. N.Purushotham Bhat	0.69	
			19	Mr. Narayan Bhat	1.62	
			20	Mr. Narayana Naik.P	1	
		21	Mr. Prasanna Keshava	1.26		

			22	Mr. Praveena Keshava Bhat	0.97	11
			23	Mr. S.Vishnu Bhat	2.37	
			24	Mr. Sri Krishna Bhat	1	
			25	Mr. Subramanya Bhat	1.2	
			26	Mr. Suresh P	1.61	
			27	Mr. T.Srikrishna Bhat	2.4	
			28	Mr. U.Ramachandra Uluvana	0.51	
			29	Mr. V.Mahaliga Bhat	4	
			30	Mr. V.Rama Bhat	1.61	
			31	Mr. V.Subramanya Bhat	3.59	
			32	Shri Jayadeva Kandige	4.85	
				Total Area	89.26	
201	Group :	PIONEER	S.No	Farmer	Area	AEU
	Group Leader :	SHEEBA S	1	Smt. Leena	0.012	8
	Regional Council :	Thanal	2	Smt. Omana.S	0.061	
	Village :	VENGANOOR	3	Smt. Ramani.K	0.02	
	Sub district :	Thiruvananthapuram	4	Smt. Sheeba	0.0931	
	Block :	ATHIYANNOOR	5	Smt. Suma.S	0.073	
	District :	TRIVANDRUM		Total Area	0.2591	
	Registration NO :	LG0900001793				
202	Group :	PIRAVANTHOOR	S.No	Farmer	Area	AEU
	Group Leader :	MANOJ.V	1	Shri Manoharan.K	1	12
	Regional Council :	VFPCCK	2	Shri Manoj.V	3	
	Village :	PUNNALA	3	Shri Ramesan.R	1	
	Sub district :	Pathanapuram	4	Shri Sahadevan	3	
	Block :	PATHANAPURAM	5	Smt. Radhamani	1	
	District :	KOLLAM		Total Area	9	
	Registration NO :	LG0900001776				
203	Group :	PKVY GREENTHANNYAM	S.No	Farmer	Area	AEU
	Group Leader :	SURESH BABU	1	Mr. Antony.C.V	0.236	6
	Regional Council :	krishi bhavan thanniyam	2	Mr. Arjunan.T.K	0.2	
	Village :	THANNIYAM	3	Mr. Babu Salim	0.2	
	Sub district :	Thrissur	4	Mr. Balakrishnan.N.R	0.104	
	Block :	ANTHIKKAD	5	Mr. Brijesh.T	0.244	
	District :	THRISSUR	6	Mr. Chandran.A.K	0.568	
	Registration NO :	LG0900013527	7	Mr. Dhanapalan	0.24	
			8	Mr. Dhanesh Prasad	0.4	
			9	Mr. Johny .C.L	0.2	
			10	Mrs. Annie Paul	0.352	
			11	Mrs. Beena Venugopal	0.14	
			12	Mrs. Bharathi	0.2	
			13	Mrs. Bindhu Saravanan	0.9	

		14	Mrs. Chandrika.Thilakan	0.216	6
		15	Mrs. Devi Govindhankutty	0.32	
		16	Shri Suresh	0.9	
			Total Area	5.42	
204	Group : POONOR	S.No	Farmer	Area	AEU
	Group Leader : ABDUL NISAR	1	Shri Abdul Nisar	1	11
	Regional Council : VFPCCK	2	Shri Abdul Rasaq	0.5	
	Village : UNNIKULAM	3	Shri Abdul Saleem	0.75	
	Sub district : Quilandy	4	Shri Abdul Shukkur	0.5	
	Block : BALUSSERI	5	Shri Mohammed	0.25	
	District : KOZHIKODE		Total Area	3	
	Registration NO : LG0900011338				
205	Group : POTHENCODE	S.No	Farmer	Area	AEU
	Group Leader : M PANKAJAKSHAN NAIR	1	Mr. P G Sajith Kumar	1.5	9
	Regional Council : VFPCCK	2	Shri Dassayan	0.8	
	Village : IROOPARA	3	Shri M Pankajakshan	0.4	
	Sub district : Thiruvananthapuram	4	Shri Prabhullachandran	1.5	
	Block : KAZHAKUTTAM	5	Shri Shibu	0.65	
	District : TRIVANDRUM		Total Area	4.85	
	Registration NO : LG0900002542				
206	Group : POURNAMI KAYYUR	S.No	Farmer	Area	AEU
	Group Leader : ATTIPPIL SUKUMARAN	1	Shri Attippil Sukumaran	0.1	11
	Regional Council : VFPCCK	2	Shri K.Raghavan	0.2	
	Village : KAYYUR	3	Shri K.V.Kottan	0.1	
	Sub district : Hosdurg	4	Shri K.V.Purushothaman	0.1	
	Block : NILESHWAR	5	Shri M.Govindan	0.24	
	District : KASARGOD	6	Shri M.Raghavan	0.27	
	Registration NO : LG0900007852	7	Shri T.Bhaskaran	0.1	
		8	Smt. A.K.Paru	0.2	
		9	Smt. M.Paru	0.1	
		10	Smt. T.K.Madhavi	0.1	
			Total Area	1.51	
207	Group : PRAKRITHI	S.No	Farmer	Area	AEU
	Group Leader : GEORGE TP	1	Mr. Abdurahiman	0.2	13
	Regional Council : VFPCCK	2	Mr. Alavi Mk	0.1	
	Village : PULLIPADAM	3	Mr. George Tp	0.2	
	Sub district : Nilambur	4	Mr. Muhammed A	0.1	
	Block : WANDOOR	5	Mr. Muhammed C	0.1	
	District : MALAPPURAM	6	Mr. Rajan	0.1	
	Registration NO : LG0900003773	7	Mr. Sakeer N	0.1	
		8	Mr. Shajimon V	0.1	
		9	Mr. Ummer K	0.24	
			Total Area	1.24	

208	Group :	PRAKRITI	S.No	Farmer	Area	AEU
	Group Leader :	SUGUNAN T V	1	Mr. Gopalakrishnan K A	0.16	15
	Regional Council :	VFPCCK	2	Shri E P Isahak	0.876	
	Village :	MANNAMANGALAM	3	Shri E O Pathrose	0.4	
	Sub district :	Thrissur	4	Shri John C	0.42	
	Block :	OLLUKKARA	5	Shri John N M	0.4	
	District :	THRISSUR	6	Shri Narayanan M A	0.22	
	Registration NO :	LG0900001930	7	Shri Sugunan T V	0.2	
			Total Area	2.676		
209	Group :	PRATHEEKSHA BALAL	S.No	Farmer	Area	AEU
	Group Leader :	JOSEPH SEBASTIAN	1	Shri E.A.Joseph	1.08	11
	Regional Council :	VFPCCK	2	Shri Jacob Saji	1.2	
	Village :	MALOTH	3	Shri Joseph Sebastian	1.6	
	Sub district :	Hosdurg	4	Shri Joseph Thomas	1.6	
	Block :	NILESHWAR	5	Shri Joseph.K.J	1.2	
	District :	KASARGOD		Total Area	6.68	
	Registration NO :	LG0900005455				
210	Group :	PRATHIPHA	S.No	Farmer	Area	AEU
	Group Leader :	T. S RAMACHANDRAN	1	Shri Balakrishnakurup. K	0.148	9
	Regional Council :	VFPCCK	2	Shri Gopalakrishnan P. K	0.2	
	Village :	PALLICKAL	3	Shri M. N Pushpangathan	0.1	
	Sub district :	Adoor	4	Shri N.. Bhargava Pillai	0.2	
	Block :	PARAKODE	5	Shri Shivaraman Nair	0.2	
	District :	PATHANAMTHITTA	6	Shri T. S Ramachandran	0.2	
	Registration NO :	LG0900002398	7	Shri Vinod. G	0.2	
			Total Area	1.248		
211	Group :	PRINCE	S.No.	Farmer	Area	AEU
	Group Leader :	HARI T B	1	Shri Bino Koshi	0.4	14
	Regional Council :	VFPCCK	2	Shri Hari T B	1	
	Village :	VATHIKUDY	3	Shri Renju Joseph	0.8	
	Sub district :	Udumbanchola	4	Shri Saji Joseph	1	
	Block :	IDUKKI	5	Shri Saji T T	0.2	
	District :	IDUKKI	6	Shri Santhosh P G	0.8	
	Registration NO :	LG0900004382	7	Shri Vinod Mathew	1	
			Total Area	5.2		
212	Group :	PULARI	S.No	Farmer	Area	AEU
	Group Leader :	MINIMOL JOSEPH	1	Smt. Devaki	0.1	14
	Regional Council :	VFPCCK	2	Smt. Jancy Alex	0.1	
	Village :	KANJIKUZZHI	3	Smt. Jessy Mathew	0.1	
	Sub district :	Thodupuzha	4	Smt. Lisamma Joseph	0.1	
	Block :	IDUKKI	5	Smt. Minimol Joseph	0.1	
	District :	IDUKKI		Total Area	0.5	
	Registration NO :	LG0900003849				

213	Group :	PULARI	S.No	Farmer	Area	AEU
	Group Leader :	JOSEPH MATHEW	1	Shri A.M.Augustin	0.4	14
	Regional Council :	VFPCCK	2	Shri Biju George	0.5	
	Village :	POTHANIKKAD	3	Shri Joseph Mathew	1	
	Sub district :	Kothamangalam	4	Shri Tomy N A	0.4	
	Block :	KOTHAMANGALAM	5	Smt. Mary Mathew	0.5	
	District :	ERNAKULAM		Total Area	2.8	
Registration NO :	LG0900002647					
214	Group :	PULLUR PERIYA	S.No	Farmer	Area	AEU
	Group Leader :	KUNHAMBU NAIR	1	Shri Koran P V	0.6	11
	Regional Council :	VFPCCK	2	Shri Kunhambu Nair	0.9	
	Village :	PERIYA	3	Shri P Balakrishnan	0.5	
	Sub district :	Hosdurg	4	Shri P Krishnan	0.8	
	Block :	KANHANGAD	5	Shri Raghavan Nair M	0.4	
	District :	KASARGOD		Total Area	3.2	
Registration NO :	LG0900001331					
215	Group :	PULLUR PERIYA2	S.No.	Farmer	Area	AEU
	Group Leader :	CHATHUKUTTY NAIR A	1	Shri A Narayanan	0.8	11
	Regional Council :	VFPCCK	2	Shri Chathukutty	0.4	
	Village :	PERIYA	3	Shri Gopalan P V	1.2	
	Sub district :	Hosdurg	4	Shri Gopinadhan Nair	0.5	
	Block :	KANHANGAD	5	Shri Narayanan Arol	0.8	
	District :	KASARGOD		Total Area	3.7	
Registration NO :	LG0900001335					
216	Group :	PUTHUCODE 1	S.No	Farmer	Area	AEU
	Group Leader :	ABDUL RAHMAN.U	1	Mr. Abdul Rahman.U	0.4	22
	Regional Council :	VFPCCK	2	Mr. Appunni.P.K	0.4	
	Village :	PUDUCODE	3	Mr. Ramankutty.N	0.4	
	Sub district :	Alathur	4	Mr. Saithalavi.U	0.4	
	Block :	ALATHUR	5	Mr. Siddique.P.K	0.4	
	District :	PALAKKAD	6	Mr. Yousuf.A	0.2	
Registration NO :	LG0900001656	7	Mrs. Latha	0.3		
			Total Area	2.5		
217	Group :	PUTHUCODE 2	S.No	Farmer	Area	AEU
	Group Leader :	IBRAHIM.U	1	Mr. Chandran.T.E	0.2	22
	Regional Council :	VFPCCK	2	Mr. Ibrahim.U	0.4	
	Village :	PUDUCODE	3	Mr. Muhammed.A	0.3	
	Sub district :	Alathur	4	Mr. Prabhakaran.K	0.4	
	Block :	ALATHUR	5	Mr. Ussanar	0.4	
	District :	PALAKKAD	6	Mr. Yoosafali.C	0.4	
Registration NO :	LG0900001658	7	Ms. Prema Latha.K	0.4		
			Total Area	2.5		

218	Group :	PUTHUPARIYARAM	S.No	Farmer	Area	AEU
	Group Leader :	CHAMIYAPPAN	1	Mr. Chamiyappan	0.8	22
	Regional Council :	VFPCCK	2	Mr. Chandran.V.S	0.2	
	Village :	PUTHUPARIYARAM	3	Mr. Krishnankutty.M.K	0.2	
	Sub district :	Palakkad	4	Mr. Prasanthkumar	0.2	
	Block :	MALAMPUZHA	5	Mr. Raju Francis	1.5	
	District :	PALAKKAD	6	Mr. Vinodkumar	0.3	
	Registration NO :	LG0900001636	7	Mr. Viswanathan.V.S	0.2	
			Total Area	3.4		
219	Group :	RAJAMUDY	S.No	Farmer	Area	AEU
	Group Leader :	SEENA JOMY	1	Mr. Abraham A A	0.8	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. Abraham P.C	1.2	
	Village :	UPPUTHODE	3	Mr. Alan Jose	2.4	
	Sub district :	Udumbanchola	4	Mr. Amalesh Jomy	4	
	Block :	IDUKKI	5	Mr. Annakkutty Antony	1.44	
	District :	IDUKKI	6	Mr. Augusthy M.M.	2.6	
	Registration NO :	LG0900001124	7	Mr. Augusthy V A	0.5	
			8	Mr. Augustine	1.4	
			9	Mr. Baby Abraham	0.6	
			10	Mr. Baby C K	0.88	
			11	Mr. Baby Varkey	1.2	
			12	Mr. Baiju P G	0.92	
			13	Mr. Bennett George	1.2	
			14	Mr. Benny V.A.	0.5	
			15	Mr. Benny Xaviour	0.4	
			16	Mr. Biju Thomas	6	
			17	Mr. Biju Varghese	0.6	
			18	Mr. Binoy Joseph	1.6	
			19	Mr. Binoy V.S	4	
			20	Mr. Dickson Thomas	1.308	
			21	Mr. Fr. Benno	0.4	
			22	Mr. George Chacko	0.532	
			23	Mr. George Mathew	0.4	
			24	Mr. Jayan	0.64	
			25	Mr. Jayan Joseph	1	
			26	Mr. Jomy Sebastian	3.2	
			27	Mr. Jose	0.8	
			28	Mr. Jose Michale	1.6	
			29	Mr. Jose Sebastian	0.4	
			30	Mr. Joseph	1.6	
			31	Mr. Joy	0.4	
			32	Mr. Joy	0.8	
			33	Mr. Joy	0.8	

	34	Mr. K K Narayanan	0.8	14
	35	Mr. Kocheppu	1.2	
	36	Mr. Kochukunju Chathan	0.324	
	37	Mr. Kumaran P.C.	0.288	
	38	Mr. Kunjumon Thomas	1.2	
	39	Mr. Kuriakose Mathai	0.472	
	40	Mr. Kurian Joseph	0.8	
	41	Mr. Lenin K.A	0.4	
	42	Mr. Madhukumar P.K	1.2	
	43	Mr. Mathew	1.6	
	44	Mr. Mathew	1.2	
	45	Mr. Mathew	1.36	
	46	Mr. Michel Xavier	0.4	
	47	Mr. Mohannan T D	1.4	
	48	Mr. Muralidharan Nair	0.8	
	49	Mr. Nawas P M	1.2	
	50	Mr. O B Saji	1.44	
	51	Mr. P V Thomas	0.6	
	52	Mr. Peter	0.8	
	53	Mr. Prabhakaran	1	
	54	Mr. Prasad Raghavan	0.4	
	55	Mr. Pratheesh Mathew	1.2	
	56	Mr. Prince George	1.52	
	57	Mr. Raghavan	0.4	
	58	Mr. Raghavan Kelan	1.5	
	59	Mr. Raju K.A.	0.6	
	60	Mr. Raju P.K	0.8	
	61	Mr. Ramakrishnan	0.456	
	62	Mr. Ramankutty	0.2	
	63	Mr. Reghu	0.38	
	64	Mr. Reji Chacko	0.8	
	65	Mr. Reji.P.C.	0.24	
	66	Mr. Rethesh Mathew	0.8	
	67	Mr. Roy Thomas	1.2	
	68	Mr. Sabu Dominic	0.8	
	69	Mr. Sajesh M.T.	1	
	70	Mr. Saji	1	
	71	Mr. Saji Dominic	0.6	
	72	Mr. Sasi Bhaskaran	0.2	
	73	Mr. Sasi Karunakaran	0.48	
	74	Mr. Sebastain	1	
	75	Mr. Sebastian K J	1.4	

76	Mr. Sebastian P V	2.4	14
77	Mr. Shaji Joseph	0.52	
78	Mr. Shaji Sreedharan	1.2	
79	Mr. Shibu Sebastian	0.6	
80	Mr. Shijo Sebastian	2	
81	Mr. Shiju Paul	1	
82	Mr. Shoby	0.8	
83	Mr. Shyjan	0.6	
84	Mr. Shyju Mathew	1.04	
85	Mr. Sibichan Joseph	1.2	
86	Mr. Sibichen Thomas	1.2	
87	Mr. Siby George	1	
88	Mr. Siby Mathew	0.4	
89	Mr. Siby Sebastian	1	
90	Mr. Siju P N	1.6	
91	Mr. Sini Johny	1.2	
92	Mr. Sony George	1.2	
93	Mr. Sony Sebastian	0.8	
94	Mr. Sreedharan C K	1.9	
95	Mr. Sudhakaran	0.4	
96	Mr. Sudheer K S	1.4	
97	Mr. Suku.P.B.	0.32	
98	Mr. Sukumaran	2.8	
99	Mr. Sunilkumar C.P	0.264	
100	Mr. Sunny	0.28	
101	Mr. Sunny Sebastian	1	
102	Mr. Suresh	0.4	
103	Mr. Suresh P S	1.2	
104	Mr. Thankachan V M	0.8	
105	Mr. Thomas	2	
106	Mr. Thomas Joseph	0.6	
107	Mr. Thomas K A	1.2	
108	Mr. Thomas K.C	0.8	
109	Mr. Thomas K.K.	0.8	
110	Mr. Thomas K.V.	1.6	
111	Mr. Thomas K.V.	1.2	
112	Mr. Thomas M.T.	0.8	
113	Mr. Thomas Mathew	2	
114	Mr. Thomas Michael	1	
115	Mr. Thomas Sebastian	0.72	
116	Mr. Tiji P.S	0.6	
117	Mr. Tomy Joseph	0.8	

118	Mr. Tomy Sebastian	1	14
119	Mr. Udayan	0.6	
120	Mr. Unni Kuttan	0.6	
121	Mr. Unni.K.R	0.8	
122	Mr. V.D George	0.856	
123	Mr. Vasudevan Sankaran	0.4	
124	Mr. Vijayakumar	1.4	
125	Mr. Vijayan	1.4	
126	Mr. Vijayan Kelan	0.4	
127	Mr. Vinu Ramachandran	0.4	
128	Mr. Viswanathan	1.4	
129	Mr. Viswanathan K	1.4	
130	Mrs. Alphonsa	0.272	
131	Mrs. Ammini Chellappan	1	
132	Mrs. Ancy Baby	0.4	
133	Mrs. Annakutty Mathew	0.4	
134	Mrs. Annakutty Michle	0.6	
135	Mrs. Beena Benoy	0.52	
136	Mrs. Bindhu Aji	0.4	
137	Mrs. Bindhu Babu	1	
138	Mrs. Bindhu Dinesh	0.4	
139	Mrs. Chellamma Ravi	0.36	
140	Mrs. Chinnamma Chacko	0.5	
141	Mrs. Daisy Thankachan	0.6	
142	Mrs. Elikutty Joseph	1.6	
143	Mrs. Elsamma	0.8	
144	Mrs. Elsy George	0.4	
145	Mrs. Elyamma Augusty	0.4	
146	Mrs. Indira Kuttappen	0.4	
147	Mrs. Jaya	0.6	
148	Mrs. Kunjumol Surendran	0.2	
149	Mrs. Leelamma Ramankutty	0.4	
150	Mrs. Leena Wilson	0.48	
151	Mrs. Lekha Harilal	0.236	
152	Mrs. Lilly (Thressiya)	1.2	
153	Mrs. Lolitha Sumod	0.4	
154	Mrs. Manju Rethesh	0.4	
155	Mrs. Mary Antony	0.4	
156	Mrs. Mercy Thomas	0.3	
157	Mrs. Mini Joji	0.4	
158	Mrs. Omana Soman	0.2	

159	Mrs. Preethy Roy	0.32	14
160	Mrs. Radhamani Divakaran	0.8	
161	Mrs. Rajani Raveendran	0.6	
162	Mrs. Remani Sabu	0.46	
163	Mrs. Riya Pratheesh	0.4	
164	Mrs. Seena	1.4	
165	Mrs. Seena Jacob	1.43	
166	Mrs. Shaly Johny	1.2	
167	Mrs. Sheela Jayakumar	0.2	
168	Mrs. Sheelamma Tomy	0.292	
169	Mrs. Sherly George	0.16	
170	Mrs. Shiji Chellappan	0.8	
171	Mrs. Shiny	0.28	
172	Mrs. Shiny Vincent	0.64	
173	Mrs. Siji Agusthy	3.2	
174	Mrs. Silja Santhosh	0.4	
175	Mrs. Sindhu Baiju	0.22	
176	Mrs. Sindhu Sajeev	0.4	
177	Mrs. Sinimol K K	0.2	
178	Mrs. Sobhana Sadasivan	0.6	
179	Mrs. Sosamma	0.2	
180	Mrs. Sr.Maria	0.8	
181	Mrs. Susamma Varkey	0.6	
182	Mrs. Thankamma Velayudhan	0.8	
183	Mrs. Usha	1	
184	Mrs. Ushamani	0.4	
185	Mrs. Valsamma Suresh	0.4	
186	Shri Chandran	0.268	
187	Shri Elias Elias Kuruvilla	0.8	
188	Shri George Mathew	0.4	
189	Shri Itty	1.12	
190	Shri Jacob Mathai	0.8	
191	Shri John T.J	0.8	
192	Shri Jose Sebastian	2	
193	Shri Joseph	0.8	
194	Shri Joseph	1.2	
195	Shri Joseph Devassia	1.2	
196	Shri Joseph P A	2	
197	Shri Karunakaran	0.516	
198	Shri Krishnankutty P K	0.6	
199	Shri Kuriakose Chandy	0.6	
200	Shri Kurian Joseph	1.488	

		201	Shri Kurian Kurian	2	14
		202	Shri Kuruvila K.V.	2.8	
		203	Shri Manoharan	0.6	
		204	Shri Mathew	0.4	
		205	Shri Mathew Devassia	0.8	
		206	Shri Sebastian	0.6	
		207	Shri Sebastian V.S.	1	
		208	Shri Varkey Augusthy	0.6	
		209	Smt. Ammini Chellappan	0.4	
		210	Smt. Ammini Gopi	0.4	
		211	Smt. Annakkutty Yakkoob	0.6	
		212	Smt. Annamma George	0.6	
		213	Smt. Balamani Jayan	0.6	
		214	Smt. Chellamma Prabhakaran	1.2	
		215	Smt. Elikkutty	0.6	
		216	Smt. Eliyamma Devassia	0.4	
		217	Smt. Geetha	0.32	
		218	Smt. Kumari Mohanan	0.6	
		219	Smt. Lakshmi Velayudhan	0.736	
		220	Smt. Lillikkutty Joseph	0.4	
		221	Smt. Loosi	1	
		222	Smt. Mariyakkutty John	0.8	
		223	Smt. Molly Noble	1.2	
		224	Smt. Nalinakshi	1.028	
		225	Smt. Santhamma Thankappan	1.2	
		226	Smt. Saramma Joseph	0.6	
		227	Smt. Susan Paulose	1.4	
			Total Area	207.826	
220	Group : ROHINI	S.No	Farmer	Area	AEU
	Group Leader : K RUDRA VARIYAR	1	Mr. Balakrishnan	3.23	10
	Regional Council : Thanal	2	Ms. Subhadra Varriar	0.24	
	Village : MARATHAKKARA	3	Shri Giridharan G	0.40	
	Sub district : Thrissur	4	Shri K Rudra Variyar	0.40	
	Block : IRINJALAKKUDA	5	Smt. Renuka	0.46	
	District : THRISSUR		Total Area	4.75	
	Registration NO : LG0900008002				
221	Group : SAHRUDHA	S.No	Farmer	Area	AEU
	Group Leader : T.V JOSEPH	1	Mr. Francis	0.02	21
	Regional Council : VFPCK	2	Mr. Jorge Poul	2.92	
	Village : SULTHANBATHERY	3	Mr. Joy Mp	0.742	
	Sub district : Sulthanbathery	4	Mr. P.J George	0.004	
	Block : SULTHAN BATHERY	5	Mr. P.J Jacob	0.009	
	District : WAYANAD	6	Shri T.V Joseph	0.42	
	Registration NO : LG0900002976		Total Area	4.116	

222	Group :	SALKEERTHI KAYYUR	S.No	Farmer	Area	AEU
	Group Leader :	C.V.KUMARAN	1	Shri A.K.Kunhikannan	1.02	11
	Regional Council :	VFPCK	2	Shri Balakrishnan.K	0.64	
	Village :	KAYYUR	3	Shri C.V.Kumaran	0.66	
	Sub district :	Hosdurg	4	Shri K.Amboonhi	1	
	Block :	NILESHWAR	5	Shri P.Balan	7.75	
	District :	KASARGOD	6	Shri Raghavan.K	0.29	
	Registration NO :	LG0900004523	7	Smt. P.Janaki	0.2	
			Total Area	11.56		
223	Group :	SAMANUYA	S.No	Farmer	Area	AEU
	Group Leader :	SIMON K J	1	Shri Babu T	0.2	14
	Regional Council :	VFPCK	2	Shri Benny T	0.2	
	Village :	IDUKKI	3	Shri Jayachandran C	0.34	
	Sub district :	Thodupuzha	4	Shri Joy Joseph	0.4	
	Block :	IDUKKI	5	Shri Manoj.K	1	
	District :	IDUKKI	6	Shri Radhakrishnan C	0.8	
	Registration NO :	LG0900004134	7	Shri Simon K J	0.2	
		8	Shri Sunny Joseph	1		
			Total Area	4.14		
224	Group :	SAMRIDDHI	S.No	Farmer	Area	AEU
	Group Leader :	SATISH KUMAR	1	Miss. Radhika Rammohan	1.96	14
	Regional Council :	Thanal	2	Mr. Satish	0.52	
	Village :	SHOLAYUR	3	Mr. Vickneswaran	0.48	
	Sub district :	Mannarkad	4	Mrs. Kokilashree	0.50	
	Block :	CHITTUR	5	Mrs. Nisha Srinivasan	0.70	
	District :	PALAKKAD		Total Area	4.18	
	Registration NO :	LG0900020950				
225	Group :	SAMRUDHI	S.No	Farmer	Area	AEU
	Group Leader :	ARAVINDAN K R	1	Mr. Anas.P.E	0.5	9
	Regional Council :	Deputy Director of Agriculture, (Ext) ZP- JAISALMER	2	Mr. Aravindan K R	0.75	
	Village :	ARAKAPADY	3	Mr. Bijupaul	0.4	
	Sub district :	Kunnathunad	4	Mr. Eldho.K	0.5	
	Block :	VAZHAKKULAM	5	Mr. Sukumaran Nair	0.5	
	District :	ERNAKULAM	6	Mr. T.M.Vargheese	0.3	
	Registration NO :	LG0900001619		Total Area	2.95	
226	Group :	SAMRUTHI KAYYUR	S.No	Farmer	Area	AEU
	Group Leader :	K.KARUNAKARAN	1	Shri A.Bhaskaran	0.1	11
	Regional Council :	VFPCK	2	Shri K.Karunakaran	0.1	
	Village :	KAYYUR	3	Shri K.Rajan	0.76	
	Sub district :	Hosdurg	4	Shri K.Rameshan	0.27	
	Block :	NILESHWAR	5	Shri P.Mohanan	1.2	

	District : KASARGOD Registration NO : LG0900004418	6 7 8 9 10	Shri P.Sathyan Shri Sureshan.P.K Smt. Koyithattil Chirutha Smt. M.Santha Smt. Valsala.K Total Area	0.11 0.2 1.23 0.1 0.1 4.17	11
227	Group : SAMRUTHY Group Leader : M K UNNIKRISHNAN Regional Council : VFPCCK Village : ALUR Sub district : Mukundapuram Block : MALA District : THRISSUR Registration NO : LG0900001841	S.No 1 2 3 4 5	Farmer Mr. Ignatious T L Shri Ajith Prasad Shri M K Unnikrishnan Shri Prakashan P M Shri Vinsesh P S Total Area	Area 0.6 0.48 0.64 0.23 0.4 2.35	AEU 6
228	Group : SANGEETHA KADAVATHUMUNDA Group Leader : MOLLY JOSEPH Regional Council : VFPCCK Village : MALOTH Sub district : Hosdurg Block : KANHANGAD District : KASARGOD Registration NO : LG0900009622	S.No 1 2 3 4 5 6 7	Farmer Shri Ajikumar Shri James Sebastian Shri Joseph Shri Sibi Joseph Smt. Beena James Smt. Molly Joseph Smt. Sreeja Total Area	Area 0.2 0.2 0.4 0.4 0.2 0.2 0.2 1.8	AEU 11
229	Group : SANTHIGRAM Group Leader : BABY Regional Council : Manarcadu Social Service Society Village : KALKOONTHAL Sub district : Udumbanchola Block : KATTAPPANA District : IDUKKI Registration NO : LG0900001127	S.No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	Farmer Mr. A J Sebastian Mr. Abayakumar Mr. Abhilash Antony Mr. Abraham Mr. Abraham George Mr. Abraham Joseph Mr. Abraham Thomas Mr. Albin Joy Mr. Alby M M Mr. Aneesh Mr. Aneesh Thomas Mr. Anil Kumar Mr. Antony Chacko Mr. Antony T Mr. Antony V V Mr. Babu P N Mr. Baby	Area 0.58 0.52 1.2 1.2 1 0.8 1.2 3.6 0.7 0.4 1.11 0.8 1.2 1.4 0.5 3 1.68	AEU 16

	18	Mr. Baby Kuruvilla	0.6	16
	19	Mr. Baiju P S	0.86	
	20	Mr. Benny George	2.4	
	21	Mr. Benny Joseph	0.8	
	22	Mr. Bhaskaran Nair	1	
	23	Mr. Binoy M D	0.4	
	24	Mr. Binu C Jose	1.4	
	25	Mr. C K Gopi	0.4	
	26	Mr. C P Mathan	1.4	
	27	Mr. Chacko Antony	1	
	28	Mr. Chacko Thomas	2	
	29	Mr. Chacko Thomas	1.24	
	30	Mr. Cheriyan Joseph	1	
	31	Mr. Dennies Joseph	2	
	32	Mr. Devassia George	0.23	
	33	Mr. Dileep George	0.9	
	34	Mr. Dileepkumar	0.48	
	35	Mr. Ealis	0.72	
	36	Mr. Eyochan	0.8	
	37	Mr. Francis Kuruvilla	0.66	
	38	Mr. Franics John	0.52	
	39	Mr. G Mohanan	0.46	
	40	Mr. George Mathew	0.86	
	41	Mr. George Thomas	0.6	
	42	Mr. George Varghese	0.4	
	43	Mr. Georgekutty V M	1.2	
	44	Mr. Jacob M.V	1.2	
	45	Mr. Jaimon D	1.512	
	46	Mr. Jaison Thomas	2	
	47	Mr. James Mathew	1	
	48	Mr. Jebu Joseph	0.8	
	49	Mr. Jenardhanan	0.81	
	50	Mr. Jerry Jose	1.05	
	51	Mr. Jiji Joseph	1.2	
	52	Mr. Jiji Mathew	1.3	
	53	Mr. Jijin Scaria	1.4	
	54	Mr. Johnikutty Thomas	1.4	
	55	Mr. Johnson K Mathew	0.52	
	56	Mr. Johnny	1.6	
	57	Mr. Jomon Sakariya	0.8	
	58	Mr. Jose	1.2	
	59	Mr. Jose	0.6	

60	Mr. Jose A S	0.6	16
61	Mr. Jose C S	1.2	
62	Mr. Jose P.A.	1.2	
63	Mr. Josekutty	2	
64	Mr. Joseph Augusthy	1.08	
65	Mr. Joseph C J	2.6	
66	Mr. Joseph Chacko	3.8	
67	Mr. Joseph John	0.8	
68	Mr. Joseph Joseph	1	
69	Mr. Joseph M A	0.88	
70	Mr. Joseph Mathew	1.28	16
71	Mr. Joseph Mathew	1	
72	Mr. Joseph P G	1.6	
73	Mr. Joseph Thomas	0.8	
74	Mr. Joseph Varkey	1.04	
75	Mr. Joseph Varkey	3.6	
76	Mr. Juby T Abraham	2.8	
77	Mr. K J Joseph	0.6	
78	Mr. K J Sebastian	0.8	
79	Mr. K T Jose	1.6	
80	Mr. K. N Gopi	0.3	16
81	Mr. K.J Paulose	2	
82	Mr. K.J Thomas	1.8	
83	Mr. Krishnan Gopalan	1.2	
84	Mr. Kurian Joseph	0.8	
85	Mr. Kurian N.P.	1.6	
86	Mr. Kurian Varghese	1	
87	Mr. Manoj T S	1	
88	Mr. Manual Joseph	0.8	
89	Mr. Manukumar N K	0.6	
90	Mr. Mathai Joseph	1.6	16
91	Mr. Mathew A C	1.36	
92	Mr. Mathew John	1	
93	Mr. Mathew Joseph	4.8	
94	Mr. Mathew Joseph	1	
95	Mr. Mathew Mathai	0.8	
96	Mr. Mathew Scaria	2	
97	Mr. Mathukutty Sebastine	0.8	
98	Mr. Omana Chacko	1.2	
99	Mr. P C Eliyas	0.68	
100	Mr. P J Mathew	1.6	16
101	Mr. P P Eliyas	1.4	

	102	Mr. P T Dominic	3.2	16
	103	Mr. Philip M.P	0.8	
	104	Mr. Philp Abraham	0.52	
	105	Mr. Prakash Chandran	1	
	106	Mr. Prasad A T	0.9	
	107	Mr. Purushothaman	2.2	
	108	Mr. Purushothaman Nair	0.8	
	109	Mr. Rajasekharan K.P.	2.2	
	110	Mr. Rajasekharan Nair	1.6	
	111	Mr. Rajasekharan Nair P.N	1	
	112	Mr. Rajesh K G	0.52	
	113	Mr. Rajesh T K	1.8	
	114	Mr. Ramachandran Nair	0.6	
	115	Mr. Ratnamma	2	
	116	Mr. Reji P N	1.9	
	117	Mr. Reji P P	1.46	
	118	Mr. Reji Varghese	0.8	
	119	Mr. Roy Mathew	2	
	120	Mr. Sabu Joseph	2.4	
	121	Mr. Sabu P N	2.72	
	122	Mr. Sacariya Mathew	0.8	
	123	Mr. Saji George	1.4	
	124	Mr. Saji Joseph	1	
	125	Mr. Saji K George	0.8	
	126	Mr. Saji Mathew	1.2	
	127	Mr. Sasi C K	0.8	
	128	Mr. Sasi P K	1.2	
	129	Mr. Scaria Mathew	1.2	
	130	Mr. Scariah M T	1	
	131	Mr. Sebastian P V	0.6	
	132	Mr. Shaji Joseph	1.2	
	133	Mr. Shaji K D	2.4	
	134	Mr. Shaji P A	0.4	
	135	Mr. Shaji P K	1	
	136	Mr. Shibu K M	0.90	
	137	Mr. Shiju Sebastian	1.10	
	138	Mr. Shinoj Augustine	1.4	
	139	Mr. Shobhana Soman	0.44	
	140	Mr. Shyamkumar C R	0.9	
	141	Mr. Siby	1.5	
	142	Mr. Siby Varkey	2	

143	Mr. Surendran	1.2	16
144	Mr. Suresh Babu E C	1.4	
145	Mr. T A Joseph	1.8	
146	Mr. T M Mathew	1.04	
147	Mr. T R Mohanan	0.36	
148	Mr. Thankachan Joseph	0.4	
149	Mr. Thankachan Joseph	0.72	
150	Mr. Thomas A C	1.2	
151	Mr. Thomas Abraham	1.4	
152	Mr. Thomas Chacko	0.4	
153	Mr. Thomas Davassiya	1.6	
154	Mr. Thomas Joseph	1.6	
155	Mr. Thomas Joseph	1.6	
156	Mr. Thomas K J	1.4	
157	Mr. Thomas K V	1.36	
158	Mr. Thomas Mani (Shabu)	1.2	
159	Mr. Thomas Mathai	0.8	
160	Mr. Thomas Thomas	1.2	
161	Mr. Thomas Varkey	0.4	
162	Mr. Thomman Scaria(Thomas Scaria)	4.4	
163	Mr. Tomy	0.8	
164	Mr. Tomy K M	0.48	
165	Mr. Ullas K Mathew	1	
166	Mr. V C Thomas	0.24	
167	Mr. Varghese Chacko	1	
168	Mr. Varghese John	0.4	
169	Mr. Varghese M P	0.4	
170	Mr. Varghese Thomas	1	
171	Mr. Xaviour Philipose	0.68	
172	Mrs. Annamma Mathew	3.6	
173	Mrs. Jessy James	0.6	
174	Mrs. Mary Jacob	0.4	
175	Mrs. Mary Joseph	0.4	
176	Mrs. Marykutty	1.2	
177	Mrs. Marykutty Joseph	0.2	
178	Mrs. Molly Chacko	1.10	
179	Mrs. Rani Sibi	3	
180	Mrs. Salikutty George	4	
181	Mrs. Sindhu Jebu	0.48	
	Total Area	223.42	

230	Group :	SASTHAMCOTTA	S.No	Farmer	Area	AEU
	Group Leader :	G.VIJAYAN PILLAI	1	Shri Anil Kumar.K.R	0.5	1
	Regional Council :	VFPCCK	2	Shri G.Vijayan Pillai	2	
	Village :	WEST KALLADA	3	Shri Gopalakrishna Pillai	1	
	Sub district :	Kunnathur	4	Shri Janardhanan Pillai	1	
	Block :	SASTHAMCOTTAH	5	Shri R.Balakrishnan	0.12	
	District :	KOLLAM	6	Shri Radhakrishna Pillai	0.28	
	Registration NO :	LG0900001704	7	Shri Somarajan	2.8	
			Total Area			
231	Group :	SHARIKA VENMONY	S.No	Farmer	Area	AEU
	Group Leader :	SIMON TK	1	Mr. Kuriyan Ms	0.4	9
	Regional Council :	VFPCCK	2	Mr. Ramachandran	0.16	
	Village :	VENMONY	3	Ms. Bindu	0.08	
	Sub district :	Chengannur	4	Ms. Sreedevi	0.12	
	Block :	CHENGANNUR	5	Shri Simon Tk	0.46	
	District :	ALAPPUZHA		Total Area	1.22	
	Registration NO :	LG0900002432				
232	Group :	SLPURAM	S.No	Farmer	Area	AEU
	Group Leader :	R MANOHARAN	1	Mr. C Ambujakshan	0.26	1
	Regional Council :	VFPCCK	2	Mr. K R Purushan	0.26	
	Village :	MARARIKKULAM NORTH	3	Shri D K Babu	0.2	
	Sub district :	Cherthala	4	Shri Gopinathan Chettiyar	0.26	
	Block :	KANJIKKUZHY	5	Shri Manoharan P	0.26	
	District :	ALAPPUZHA	6	Shri P. Sasi	0.6	
	Registration NO :	LG0900001732	7	Shri Pushpajan C	0.6	
			8	Shri R Manoharan	0.8	
			9	Smt. Prassanna.P	0.28	
			10	Smt. Suma Thilakan	0.3	
			11	Smt. Vasanthi	0.32	
			Total Area	4.14		
233	Group :	SNEHA	S.No	Farmer	Area	AEU
	Group Leader :	RASAK	1	Shri Damodaran	0.4	20
	Regional Council :	VFPCCK	2	Shri Eldo O A	1.41	
	Village :	MUTTIL SOUTH	3	Shri Hamsa	0.8	
	Sub district :	Vythiri	4	Shri Latheef	0.6	
	Block :	KALPETTA	5	Shri Rasak	0.4	
	District :	WAYANAD		Total Area	3.61	
	Registration NO :	LG0900002329				

234	Group :	SOORANAD	S.No	Farmer	Area	AEU
	Group Leader :	SASIDHARAN NAIR.M	1	Shri Arjunan Pillai	1.5	3
	Regional Council :	VFPCCK	2	Shri Rajendran.K	0.72	
	Village :	SOORANAD SOUTH	3	Shri Sasidharan Nair.M	1	
	Sub district :	Kunnathur	4	Shri Sasidharan Nair.P	2.5	
	Block :	SASTHAMCOTTAH	5	Shri Somasundaran Pillai	2	
	District :	KOLLAM		Total Area	7.72	
	Registration NO :	LG0900001771				
235	Group :	SOUBHAGYA	S.No	Farmer	Area	AEU
	Group Leader :	SREEKUMAR. S	1	Shri Aandhan. C	0.08	9
	Regional Council :	VFPCCK	2	Shri K. G Yohannan	0.2	
	Village :	KADAMPANADU	3	Shri P. G Thomas	0.2	
	Sub district :	Adoor	4	Shri Sathishan	0.2	
	Block :	PARAKODE	5	Shri Sreekumar. S	0.8	
	District :	PATHANAMTHITTA	6	Shri V. K Thankappan	0.28	
	Registration NO :	LG0900002389		Total Area	1.76	
236	Group :	Soubhagya Noonhiyil	S.No	Farmer	Area	AEU
	Group Leader :	SAVITHRI.K	1	Smt. Devi.A	0.16	11
	Regional Council :	VFPCCK	2	Smt. K.T.Thankamani	0.1	
	Village :	MADIKAI	3	Smt. Kalyani.K.V	0.32	
	Sub district :	Hosdurg	4	Smt. Karthyayani.P.V	0.18	
	Block :	KANHANGAD	5	Smt. Narayani.P	0.1	
	District :	KASARGOD	6	Smt. Sarojini.K	0.12	
	Registration NO :	LG0900006522	7	Smt. Sarojini.N	0.2	
			8	Smt. Sarojini.P	0.36	
			9	Smt. Savithri.K	0.14	
			Total Area	1.68		
237	Group :	South Edachira Kalam	S.No	Farmer	Area	AEU
	Group Leader :	SADASHIVAN P S	1	Miss. Meena P S	0.68	22
	Regional Council :	Thanal	2	Mr. Sadashivan P S	3.26	
	Village :	KOLLENGODE-I	3	Mr. Shyam Sundar Ramachandran	3.54	
	Sub district :	Chittur	4	Shri Sita Bai	1.77	
	Block :	KOLLENGODE	5	Shri Subhashree Sadasivan	1.06	
	District :	PALAKKAD	6	Shri Vijayshree Sadasivan	1.12	
	Registration NO :	LG0900020951		Total Area	11.46	
238	Group :	SREE DHARANI	S.No	Farmer	Area	AEU
	Group Leader :	PADMINI S	1	Shri Jayakumaran	0.16	8
	Regional Council :	Thanal	2	Shri Padmini	0.2	
	Village :	VENGANOOR	3	Smt. Prathibha	0.08	
	Sub district :	Thiruvananthapuram	4	Smt. S Jayasree	0.16	
	Block :	ATHIYANNOOR	5	Smt. Sree Lekha	0.08	
	Dis triect :	TRIVANDRUM	6	Smt. Usha	0.1	
	Registration NO :	LG0900001514		Total Area	0.78	

239	Group :	SREEBHADRA	S.No	Farmer	Area	AEU
	Group Leader :	SASIKALA	1	Miss. Ida Vijayam	0.14	8
	Regional Council :	Thanal	2	Smt. B. Sulochana	0.089	
	Village :	VENGANOOR	3	Smt. Indira.S	0.32	
	Sub district :	Thiruvananthapuram	4	Smt. S.Pasupathy	0.121	
	Block :	ATHIYANNOOR	5	Smt. Sasikala	0.1	
	District :	TRIVANDRUM	6	Smt. Sini J,S	0.012	
	Registration NO :	LG0900001725		Total Area	0.78	
240	Group :	SREEHARITHA	S.No	Farmer	Area	
	Group Leader :	SHAJAN MATHEW	1	Mr. Ajison Mathew	0.90	21
	Regional Council :	VFPCCK	2	Mr. Jose Mathew	0.455	
	Village :	NADAVAYAL	3	Mr. Jose Wald	0.4	
	Sub district :	Sulthanbathery	4	Mr. P.P Babu	0.33	
	Block :	SULTHAN BATHERY	5	Shri Shajan	1.014	
	District :	WAYANAD		Total Area	3.11	
	Registration NO :	LG0900003014				
241	Group :	SREELEKSHMI	S.No	Farmer	Area	
	Group Leader :	VIJAYADAS C	1	Mr. Manikandan.S	0.044	8
	Regional Council :	Thanal	2	Shri Binumol V	0.27	
	Village :	VENGANOOR	3	Shri Vijayadas	0.8	
	Sub district :	Thiruvananthapuram	4	Smt. Ambilijose	0.06	
	Block :	ATHIYANNOOR	5	Smt. Chandrika	0.056	
	District :	TRIVANDRUM		Total Area	1.23	
	Registration NO :	LG0900001751				
242	Group :	Sruthy Kuppadi Jaiva Karshka Sangam	S.No	Farmer	Area	
	Group Leader :	Chandhrangathan V	1	Mr. Aneesh	0.4	21
	Regional Council :	VFPCCK	2	Mr. Chandhrangathan V	1.6	
	Village :	KUPPADI	3	Mr. Raghavan	1.76	
	Sub district :	Sulthanbathery	4	Mr. T.T. Pathrose	0.26	
	Block :	SULTHAN BATHERY	5	Mrs. Aliyamma	0.2	
	District :	WAYANAD		Total Area	4.22	
	Registration NO :	LG0900002012				
243	Group :	SUKRUTHA	S.No	Farmer	Area	
	Group Leader :	RAMACHANDRAN K	1	Mr. Aboobacker	0.1	13
	Regional Council :	VFPCCK	2	Mr. Achuthanandan	0.1	
	Village :	THIRUVALI	3	Mr. Alavikuttiman	0.08	
	Sub district :	Nilambur	4	Mr. Ashraf Ali	0.2	
	Block :	WANDOOR	5	Mr. Ibrahim Pt	0.24	
	District :	MALAPPURAM	6	Mr. Kelu P	0.1	
	Registration NO :	LG0900003389	7	Mr. Ramachandran K	0.12	
			8	Mr. Sunil Kumar	0.06	
			Total Area	1.008		

244	Group :	SUSTHIRA	S.No	Farmer	Area	AEU
	Group Leader :	GEORGE KJ	1	Mr. Cheriyam Mathew	0.4	15
	Regional Council :	VFPCCK	2	Mr. George KJ	0.16	
	Village :	EDAKKARA	3	Mr. Joseph Tv	0.4	
	Sub district :	Nilambur	4	Mr. Kuryan Tv	0.2	
	Block :	NILAMBUR	5	Mr. Moideen Kutty N	0.4	
	District :	MALAPPURAM	6	Mr. Narayanan	0.4	
	Registration NO :	LG0900005536	7	Mr. Raju	0.2	
			8	Mr. Sebastian	0.4	
				Total Area	2.56	
245	Group :	THANKAMONY	S.No	Farmer	Area	AEU
	Group Leader :	MATHEW MATHAI	1	Mr. A D Joseph	0.664	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. A. D Thomas	0.8	
	Village :	THANKAMONY	3	Mr. A. T Thomas	1	
	Sub district :	Udumbanchola	4	Mr. Akkamma Joseph	3.8	
	Block :	IDUKKI	5	Mr. Alex Varghese	1.28	
	District :	IDUKKI	6	Mr. Antony Devassia	1.184	
	Registration NO :	LG0900001132	7	Mr. Antony Varghese	6	
			8	Mr. Augusthy Joseph	5.2	
			9	Mr. Augustin Jacob	2	
			10	Mr. Augustine P.K.	1.088	
			11	Mr. Babu Thomas	2	
			12	Mr. Baby John	2	
			13	Mr. Benny Paul	0.4	
			14	Mr. Biju George	0.6	
			15	Mr. Binoy Joseph	1	
			16	Mr. Binoy Mathew	1.2	
			17	Mr. Binoy Thomas	0.4	
			18	Mr. C S Rajendran	0.4	
			19	Mr. C V Chacko	0.6	
			20	Mr. Chacko Joseph	0.8	
			21	Mr. Chandy Kurian	2	
			22	Mr. Dominic Chandy	0.6	
			23	Mr. Elias Sakariya	1	
			24	Mr. Emmanuel Joseph	1.3	
			25	Mr. Francis Xavier	0.8	
			26	Mr. Gracy Joy	0.4	
			27	Mr. Hariharan P.A	1	
			28	Mr. Jaimon Joseph	1.2	
			29	Mr. James Varghese	1	
			30	Mr. Joby Antony	1.6	
			31	Mr. Jose	0.8	

	32	Mr. Jose Cherian	0.6	14
	33	Mr. Jose Devassia	1.2	
	34	Mr. Jose Sacaria	1	
	35	Mr. Joseph Chandy	1.2	
	36	Mr. Joseph Antony	0.4	
	37	Mr. Joseph Augusthy	0.8	
	38	Mr. Joseph Cherian	1	
	39	Mr. Joseph Joseph	1	
	40	Mr. Joseph Mathew	3	
	41	Mr. Joseph Sebastian	1.8	
	42	Mr. Joseph Varghese	0.8	
	43	Mr. Joy Kurian	0.8	
	44	Mr. Joy Thomas	1.2	
	45	Mr. K J Joseph	0.64	
	46	Mr. K.V Radhakrishnan	0.4	
	47	Mr. Karunakaran	0.8	
	48	Mr. Lince Dominic	1.2	
	49	Mr. M M Varghese	0.48	
	50	Mr. M. D Cherian	0.9	
	51	Mr. Mani Kurian	0.64	
	52	Mr. Manual Joseph	1.36	
	53	Mr. Marykutty Thomas	1.4	
	54	Mr. Mathai Kurian	1	
	55	Mr. Mathew Mathai	1.5	
	56	Mr. Mathew Thomas	0.4	
	57	Mr. O J Josekutty	1.4	
	58	Mr. P M Raju	1.56	
	59	Mr. P.C Joseph	0.2	
	60	Mr. P.T. Thomas	1.08	
	61	Mr. Prasad K.S	1.2	
	62	Mr. Raju Jacob	0.48	
	63	Mr. Reji Thomas	0.428	
	64	Mr. Rex Jose	0.72	
	65	Mr. Roy Thomas	1.6	
	66	Mr. Roychan Mathew	0.2	
	67	Mr. Sabu Sebastian	1	
	68	Mr. Sacaria Kurian	1	
	69	Mr. Saji Kurian	1.2	
	70	Mr. Saji Philip	0.8	
	71	Mr. Saji Thomas	0.44	
	72	Mr. Santhosh Babu	0.64	
	73	Mr. Sasi A R	0.6	

		74	Mr. Scariah Scariah	1.2	14	
		75	Mr. Sebastain P.C	0.3		
		76	Mr. Sebastine Philip	1.6		
		77	Mr. Shaji M G	0.56		
		78	Mr. Shaji Mathew	0.6		
		79	Mr. Shaji P K	0.4		
		80	Mr. Shaji Sebastian	1.072		
		81	Mr. Shaji Thomas	0.4		
		82	Mr. Shaju Joseph	1.6		
		83	Mr. Shaju Kurian	1.2		
		84	Mr. Shaju M M	0.6		
		85	Mr. Shibu Joseph	1		
		86	Mr. Siby Mathew	0.6		
		87	Mr. Somy Thomas	0.4		
		88	Mr. Sunny Joseph	0.8		
		89	Mr. Sunny Mathew	1.6		
		90	Mr. T M Raju	0.9		
		91	Mr. T N Gopi	0.5		
		92	Mr. Thomas Devasia	2		
		93	Mr. Thomas Devassia	1.2		
		94	Mr. Thomas John	0.6		
		95	Mr. Thomas John	0.8		
		96	Mr. Thomas Kurian	0.7		
		97	Mr. Thomas Mathew	2		
		98	Mr. Thomaskutty Kurian	0.8		
		99	Mr. Tijo Philip	1.2		
		100	Mr. Tomy K.J	0.8		
		101	Mr. Vincent Enashu	1		
		102	Mr. Vinod P.G	1		
		103	Mr. Xavior Shaavurir	0.9		
		104	Mrs. Beena Joseph	0.8		
		105	Mrs. Licy Joseph	0.8		
		106	Mrs. Mariakutty Kurian	0.8		
		107	Mrs. Shiny George	0.6		
		108	Mrs. Valsamma Francis	1.2		
			Total Area	116.716		
246	Group : THAZHAKARA I	S.No	Farmer	Area		AEU
	Group Leader : UMANANDAN	1	Mr. Ravi R	0.24		3
	Regional Council : VFPCCK	2	Mr. Shivadasan Pillai	0.2		
	Village : VETTIYAR	3	Mr. Umanandan	0.94		
	Sub district : Mavelikkara	4	Mrs. Bindu Devarajan	0.1		
	Block : MAVELIKKARA	5	Mrs. Rajalakshmi	0.12		
	District : ALAPPUZHA		Total Area	1.6		
	Registration NO : LG0900002596					

247	Group :	THAZHAKARA 2	S.No	Farmer	Area	AEU
	Group Leader :	RAJENDRA KURUP	1	Mr. Ajayan	0.54	3
	Regional Council :	VFPCCK	2	Mr. Sunil Kumar Pc	0.864	
	Village :	VETTIYAR	3	Mrs. Kunjumol	0.1	
	Sub district :	Mavelikkara	4	Mrs. Lalithamma	1.6	
	Block :	BHARANICAVU	5	Shri Rajendra Kurup	0.96	
	District :	ALAPPUZHA		Total Area	4.064	
	Registration NO :	LG0900002625				
248	Group :	THE ORGANIC	S.No	Farmer	Area	
	Group Leader :	ZACHARIAS J.SHAN	1	Shri Devasia Mathai	0.132	4
	Regional Council :	VFPCCK	2	Shri Jose Chacko	0.132	
	Village :	AIMANAM	3	Shri K,U Thomas	0.2	
	Sub district :	Kottayam	4	Shri P.T.Abraham	0.2	
	Block :	ETTUMANOOR	5	Shri Raju Sebastian	0.16	
	District :	KOTTAYAM	6	Shri Zacharias J.Shan	0.4	
	Registration NO :	LG0900003927		Total Area	1.224	
249	Group :	THEJAS PALLIKKARA	S.No	Farmer	Area	
	Group Leader :	M.Kunhikannan Nair	1	Shri A.Leela	0.12	7
	Regional Council :	VFPCCK	2	Shri A.Venugopalan	0.1	
	Village :	PALLIKKARA	3	Shri K.Gangadharan Nair	0.5	
	Sub district :	Hosdurg	4	Shri Karunakaran.P	0.5	
	Block :	KASARGOD	5	Shri M.Kunhikannan Nair	1	
	District :	KASARGOD		Total Area	2.22	
	Registration NO :	LG0900007571				
250	Group :	THIRUVATHIRA	S.No.	Farmer	Area	
	Group Leader :	RAJU S	1	Mr. E.S	0.0768	10
	Regional Council :	Thanal	2	Mr. Radhakrishnan M	0.2023	
	Village :	KODAKARA	3	Shri Raju S	0.1618	
	Sub district :	Mukundapuram	4	Smt. .Rugmini E	0.3005	
	Block :	IRINJALAKKUDA	5	Smt. Rajasree V	0.1602	
	District :	THRISSUR		Total Area	0.9016	
	Registration NO :	LG0900007923				
251	Group :	THOPRAMKUDY	S.No	Farmer	Area	
	Group Leader :	THOMAS K.J	1	Mr. George Thomas	0.8	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. Jaison George	0.6	
	Village :	VATHIKUDY	3	Mr. Joseph Thomas	1.6	
	Sub district :	Udumbanchola	4	Mr. Joseph Varkey	1.6	
	Block :	IDUKKI	5	Mr. Mathew	1	
	District :	IDUKKI	6	Mr. Mathew V.U.	0.8	
	Registration NO :	LG0900001125	7	Mr. Purushothaman	1.6	
			8	Mr. Rajesh	0.8	
			9	Mr. Raju	1.2	
			10	Mr. Roy	0.8	

			11	Mr. Shaji P.T.	0.7	
			12	Mr. Shiju P.R	0.8	14
			13	Mr. Shinto	0.8	
			14	Mr. Thomas Chacko	1.2	
			15	Mr. Thomas Devassia	0.8	
			16	Mr. Thomas Joseph	0.6	
			17	Mr. Unnikrishnan Ramachandran	0.4	
			18	Mrs. Annamma Mathew	1	
			19	Mrs. Jameela Tomy	0.6	
			20	Mrs. Lissy	0.6	
			21	Mrs. Mary Thomas	0.7	
			22	Mrs. Molly Kochunarayanan	0.6	
			23	Mrs. Radha Kunjumon	0.8	
			24	Mrs. Resmi Sunilkumar	0.8	
			25	Mrs. Selin Shaji	0.2	
			26	Mrs. Sheela Ayyappan	0.6	
			27	Mrs. Shylaja .	0.8	
			28	Mrs. Sobhana Sudhakaran	0.4	
			29	Mrs. Sreedevi	0.6	
			30	Mrs. Thankamma Narayanan	0.4	
			31	Shri George V.D	0.865	
			32	Smt. Ammini Rajan	0.4	
			33	Smt. Rajamani Sukumaran	0.4	
			34	Smt. Thankamma Krishnan	0.4	
			35	Smt. Thankamma Rajan	0.4	
			36	Smt. Vijayamma	0.4	
				Total Area	27.065	
252	Group :	THRIKKUR	S.No	Farmer	Area	AEU
	Group Leader :	MALLU M M	1	Shri Baiju N U	0.4	10
	Regional Council :	VFPCCK	2	Shri Bhaskaran O V	0.372	
	Village :	TRIKKUR	3	Shri Govindan M M	0.1	
	Sub district :	Mukundapuram	4	Shri Joshy Mundakkal	0.32	
	Block :	KODAKARA	5	Shri Lonappan K P	0.72	
	District :	THRISSUR	6	Shri Mallu M	0.4	
	Registration NO :	LG0900001857	7	Shri Mohanan N	1.02	
			8	Shri Muralidharan	0.4	
			9	Shri Rajan N	0.4	
			10	Shri Ramakrishnan A	1	
				Total Area	5.132	
253	Group :	THRIVENI	S.No	Farmer	Area	AEU
	Group Leader :	SHYAM KRISHNAN	1	Miss. Muthu Lekshmi	0.2832	9
	Regional Council :	Thanal	2	Mr. Minood C R	0.0242	
	Village :	Thiruvananthapuram	3	Mr. Pramod K	0.0404	
	Sub district :	Thiruvananthapuram	4	Mr. S Mahesh	0.0809	

	Block : Thiruvananthapuram Rural	5	Mr. Shyam Krishna	0.0607	9
	District : TRIVANDRUM		Total Area	0.4894	
	Registration NO : LG0900013068				
254	Group : Thriveni Cheriyaakkara	S.No	Farmer	Area	AEU
	Group Leader : NARAYANAN.P	1	Shri Gangadharan.A	0.68	11
	Regional Council : VFPCCK	2	Shri Karunakaran.T.V	0.52	
	Village : KAYYUR	3	Shri Kunhiraman.A.C	0.7	
	Sub district : Hosdurg	4	Shri Lakshmanan.M	0.14	
	Block : NILESHWAR	5	Shri Narayanan.P	0.19	
	District : KASARGOD	6	Shri Thamban.M.V	0.1	
	Registration NO : LG0900006420	7	Smt. Karthyayani.P.M	0.4	
			Total Area	2.73	
255	Group : THULASI	S.No	Farmer	Area	AEU
	Group Leader : JOSE AUGUSTIAN	1	Mr. P.A Baby	0.4	21
	Regional Council : VFPCCK	2	Mr. Thomas V.T	0.28	
	Village : NADAVAYAL	3	Shri Jose Augustian	1.624	
	Sub district : Sulthanbathery	4	Smt. Annamma	0.4	
	Block : SULTHAN BATHERY	5	Smt. Annie Jose	1.4	
	District : WAYANAD		Total Area	4.104	
	Registration NO : LG0900004997				
256	Group : THUSHARAM	S.No	Farmer	Area	AEU
	Group Leader : A.J.Baby Ambazhathinal	1	Shri A.J.Baby Ambazhathinal	0.8	11
	Regional Council : VFPCCK	2	Shri A.L.Thomaas	0.1	
	Village : MALOTH	3	Shri Joseph Mathai	0.4	
	Sub district : Hosdurg	4	Shri Lukhose.A.N.	0.4	
	Block : KANHANGAD	5	Shri Rennimon.A.N	0.1	
	District : KASARGOD	6	Smt. Annakutty Thomaas	0.4	
	Registration NO : LG0900009322	7	Smt. Beena Baby	0.4	
			Total Area	2.6	
257	Group : UDUMBANNOOR	S.No	Farmer	Area	AEU
	Group Leader : T M SUGATHAN	1	Shri Cyriac Thomas	0.16	14
	Regional Council : VFPCCK	2	Shri George Lonappan	1.3	
	Village : UDUMBANNOOR	3	Shri Jose Augustine	0.6	
	Sub district : Thodupuzha	4	Shri Narayanan K R	0.2	
	Block : ELEMDESAM	5	Shri Stanislaus	1.5	
	District : IDUKKI	6	Shri T M Sugathan	1	
	Registration NO : LG0900003484		Total Area	4.76	
258	Group : UJJALA	S.No	Farmer	Area	AEU
	Group Leader : PC JOSEPH	1	Mr. Abraham Thomas	0.16	4
	Regional Council : VFPCCK	2	Mr. Jacob Chacko	0.28	
	Village : EDATHUA	3	Mr. Joseph Fransis	0.4	
	Sub district : Kuttanad	4	Mr. Mathew Cherian	0.2	
	Block : CHAMPAKULAM	5	Mr. Pc Abraham	0.2	
	District : ALAPPUZHA	6	Mr. Pc Joseph	1.2	
	Registration NO : LG0900004373	7	Mr. Pk Shashidara Kurup	0.24	
			Total Area	2.68	

259	Group :	ULLIYERI	S.No	Farmer	Area	AEU
	Group Leader :	BHASKARAN P.K.	1	Shri Bhaskaran P.K.	0.3	11
	Regional Council :	VFPCCK	2	Shri Gangadharan	0.2	
	Village :	ULLIYERI	3	Shri K. Rajan	0.2	
	Sub district :	Quilandy	4	Shri N.K. Sankaran	0.2	
	Block :	BALUSSERI	5	Shri Shaju	0.16	
	District :	KOZHIKODE		Total Area	1.06	
Registration NO :	LG0900001742					
260	Group :	UNARVE	S.No	Farmer	Area	AEU
	Group Leader :	MATHEW VC	1	Mr. Joseph Thomas	0.6	4
	Regional Council :	VFPCCK	2	Mr. Mathew Vc	0.12	
	Village :	THAKAZHY	3	Mr. St Chacko	0.348	
	Sub district :	Kuttanad	4	Mrs. Jincy Cicil	0.4	
	Block :	CHAMPAKULAM	5	Mrs. Shikutti Mathew	1	
	District :	ALAPPUZHA		Total Area	2.468	
Registration NO :	LG0900003920					
261	Group :	UNNIKULAM	S.No	Farmer	Area	AEU
	Group Leader :	T.K. BALAN NAIR	1	Shri Dinesan	0.8	11
	Regional Council :	VFPCCK	2	Shri Govindankutty Nair	0.8	
	Village :	UNNIKULAM	3	Shri Krishnan Kutty	0.6	
	Sub district :	Quilandy	4	Shri T.K. Balan Nair	0.4	
	Block :	BALUSSERI	5	Shri Velayudhan	0.52	
	District :	KOZHIKODE		Total Area	3.12	
Registration NO :	LG0900001743					
262	Group :	URAVE	S.No	Farmer	Area	AEU
	Group Leader :	P.J THOMAS	1	Mr. Gobalan	0.04	21
	Regional Council :	VFPCCK	2	Mr. Jose George	1.08	
	Village :	NADAVAYAL	3	Mr. Joshi Joseph	1.2	
	Sub district :	Sulthanbathery	4	Mr. K.J Joseph	0.56	
	Block :	SULTHAN BATHERY	5	Mr. Mathew	0.24	
	District :	WAYANAD	6	Mr. N.A Benny	0.23	
	Registration NO :	LG0900002964	7	Mr. Thankachan E.M	0.4	
		8	Shri P.J Thomas	0.65		
			Total Area	4.4		
263	Group :	URVARA	S.No	Farmer	Area	AEU
	Group Leader :	SATHEESH CHANDRAN	1	Mr. Gopalakrishnan Pp	0.2	15
	Regional Council :	VFPCCK	2	Mr. Narayanan K	0.12	
	Village :	URANGATTIRI	3	Mr. Prathap Chandran	0.2	
	Sub district :	Ernad	4	Mr. Raveendran C	0.4	
	Block :	AREAKODE	5	Mr. Sasikumar Bp	0.6	
	District :	MALAPPURAM	6	Mr. Satheesh Chandran	0.58	
Registration NO :	LG0900001951	7	Mr. Unnikrishnan	0.2		
			Total Area	2.3		

264	Group :	USHAS ALATHOOR	S.No	Farmer	Area	AEU
	Group Leader :	DEVASSIA	1	Shri Anto Kakkonal	0.74	21
	Regional Council :	Wayanad Social Service Society	2	Shri Augastine Kavalakkattu	3.54	
	Village :	PULPALLI	3	Shri Baby	1.62	
	Sub district :	Sulthanbathery	4	Shri Benny Mathew Kuzhuppimalil	3.24	
	Block :	SULTHAN BATHERY	5	Shri Damodharan Pilla Alummoottil	3.12	
	District :	WAYANAD	6	Shri Devasia Moolayil	1.11	
	Registration NO :	LG0900001174	7	Shri Devassia P M Poovathottathil	6.98	
			8	Shri George Unnipallil	2.02	
			9	Shri Jose Kavalakattu	3.24	
			10	Shri Joseph	1.13	
			11	Shri Joseph Poovathottathil	2.22	
			12	Shri Mani	3.16	
			13	Shri Roy Antony Kavalakattu	3.16	
		14	Shri Thomas Arimalil	0.39		
			Total Area	35.68		
265	Group :	VADAKARAPATHY	S.No	Farmer	Area	AEU
	Group Leader :	SEBASTIAN.S	1	Mr. Jerlin Sowrimuthu	0.4	23
	Regional Council :	VFPCCK	2	Mr. Renswick	0.4	
	Village :	KOZHINJAMPARA	3	Mr. Shanmugha Selvam	0.4	
	Sub district :	Chittur	4	Mr. Thobias.N	0.4	
	Block :	CHITTUR	5	Mrs. Gracy	0.4	
	District :	PALAKKAD	6	Shri Sebastian.S	0.5	
Registration NO :	LG0900003146		Total Area	2.5		
266	Group :	VADAKARAPATHY2	S.No	Farmer	Area	AEU
	Group Leader :	KATHIRVEL.S	1	Mr. Arul	0.3	23
	Regional Council :	VFPCCK	2	Mr. P.T.Victorlazer	0.4	
	Village :	VADAKARAPATHY	3	Mr. Pushparaj.N	0.8	
	Sub district :	Chittur	4	Mr. Raju.S	0.2	
	Block :	CHITTUR	5	Mr. Simon.S	0.2	
	District :	PALAKKAD	6	Mr. William.M	0.3	
Registration NO :	LG0900003173	7	Shri Kathirvel.S	0.3		
			Total Area	2.5		
267	Group :	VADAKARAPATHY3	S.No	Farmer	Area	AEU
	Group Leader :	KUMAR.K	1	Mr. Arulappan.G	0.2	23
	Regional Council :	VFPCCK	2	Mr. Arulmaripappu.R	0.4	
	Village :	VADAKARAPATHY	3	Mr. Periyanyakam.S	0.4	
	Sub district :	Chittur	4	Mr. Rangaswami.S	0.4	
	Block :	CHITTUR	5	Shri Alphonse Mariavyanni	0.6	
District :	PALAKKAD	6	Shri Kumar.K	0.5		
Registration NO :	LG0900003183		Total Area	2.5		

268	Group :	VADAKARAPATHY4	S.No	Farmer	Area	AEU
	Group Leader :	IRUDAYASWAMY..M	1	Shri Irudayaswamy..M	0.7	23
	Regional Council :	VFPCCK	2	Shri Krishnan.A	0.4	
	Village :	VADAKARAPATHY	3	Shri Muthuswami.S	0.4	
	Sub district :	Chittur	4	Shri Nallappan.T	0.4	
	Block :	CHITTUR	5	Smt. Esther.L	0.4	
	District :	PALAKKAD	6	Smt. Pakkaiammal.S	0.2	
	Registration NO :	LG0900003188		Total Area	2.5	
269	Group :	VADAKKEPOIYLUR	S.No	Farmer	Area	
	Group Leader :	SREEDARAN.K	1	Mr. Krishnan N.K	0.2	11
	Regional Council :	VFPCCK	2	Shri Govinda Das P V	0.2	
	Village :	THRIPPANGOTTUR	3	Shri Kumaran C.P	0.1	
	Sub district :	Thalassery	4	Shri Sreedaran.K	0.1	
	Block :	KUTHUPARAMBA	5	Shri Surendran P	0.08	
	District :	KANNUR		Total Area	0.68	
	Registration NO :	LG0900002031				
270	Group :	VAIVIDYA	S.No	Farmer	Area	
	Group Leader :	PRAVEEN M	1	Mr. Gopinathan Kp	0.4	13
	Regional Council :	VFPCCK	2	Mr. Mohammedali Op	0.26	
	Village :	CHEMBRASSERI	3	Mr. Mohanan	0.1	
	Sub district :	Ernad	4	Mr. Praveen M	0.4	
	Block :	WANDOOD	5	Mr. Rajeev Kp	0.12	
	District :	MALAPPURAM	6	Mr. Raveendran K	0.4	
	Registration NO :	LG0900001992		Total Area	1.68	
271	Group :	VALAKOM	S.No	Farmer	Area	
	Group Leader :	Chandramohan.R	1	Shri Bala Krishna Pillai	1.5	9
	Regional Council :	VFPCCK	2	Shri Chandramohan.R	3	
	Village :	UMMANNOOR	3	Shri Gopinathan Pillai.C	1.5	
	Sub district :	Kottarakkara	4	Shri Mohanan Pillai	2	
	Block :	KOTTARAKKARA	5	Shri Mohanan Pillai	1.5	
	District :	KOLLAM		Total Area	9.5	
	Registration NO :	LG0900001795				
272	Group :	VALLIKUNNAM	S.No	Farmer	Area	
	Group Leader :	G PARAMESWARAN PILLAI	1	Mrs. Jaya	0.12	3
	Regional Council :	VFPCCK	2	Mrs. Jayasree.P	0.2	
	Village :	VALLIKUNNAM	3	Mrs. Saraswathy	0.16	
	Sub district :	Mavelikkara	4	Mrs. Thankamani	0.2	
	Block :	BHARANICAVU	5	Shri G Parameswaran	0.4	
	District :	ALAPPUZHA		Total Area	1.08	
	Registration NO :	LG0900002204				

273	Group :	VANIYAMKULAM	S.No	Farmer	Area	AEU
	Group Leader :	MERCY GEORGE	1	Mr. Raveendranathan	0.4	10
	Regional Council :	VFPCK	2	Mr. Salim.K.P	0.4	
	Village :	VANIYAMKULAM-I	3	Shri Balakrishnan.P	0.4	
	Sub district :	Ottappalam	4	Shri N.Kadar	0.2	
	Block :	OTTAPPALAM	5	Shri Prabhakaran.T.P	0.1	
	District :	PALAKKAD	6	Shri Sethumadhavan.K	0.4	
	Registration NO :	LG0900003089	7	Shri T.M.Venugopalan	0.4	
			8	Smt. Mercy George	0.2	
			Total Area	2.5		
274	Group :	VARSHA	S.No	Farmer	Area	AEU
	Group Leader :	K D DEVIS	1	Shri Jacob K D	0.8	10
	Regional Council :	VFPCK	2	Shri Johnson P P	0.4	
	Village :	PARIYARAM	3	Shri Joseph K M	0.1	
	Sub district :	Mukundapuram	4	Shri K D Devassy	0.8	
	Block :	CHALAKKUDY	5	Shri Lazar P I	2.5	
	District :	THRISSUR		Total Area	4.6	
	Registration NO :	LG0900001772				
275	Group :	VAZHATHOPPU	S.No	Farmer	Area	AEU
	Group Leader :	V.J GEORGE	1	Mr. A.J Jose	3.6	14
	Regional Council :	Manarcadu Social Service Society	2	Mr. Alexandar	0.6	
	Village :	IDUKKI	3	Mr. Aliyar	0.8	
	Sub district :	Thodupuzha	4	Mr. Anas E.K	0.5	
	Block :	IDUKKI	5	Mr. Anoop Mathew	0.28	
	District :	IDUKKI	6	Mr. Ansar	0.1	
	Registration NO :	LG0900001151	7	Mr. Appachan	0.8	
			8	Mr. Babu	2.4	
			9	Mr. Babu	0.4	
			10	Mr. Babu K G	0.6	
			11	Mr. Babu K.N.	0.8	
			12	Mr. Baby	1.6	
			13	Mr. Baby	0.4	
			14	Mr. Benny John	0.8	
			15	Mr. Benny Joseph	0.6	
			16	Mr. Bhaskaran	0.8	
			17	Mr. Bibin George	0.8	
			18	Mr. Biju	0.28	
			19	Mr. Binesh P.M.	1	
			20	Mr. Binoy	1	
			21	Mr. Binoy George	0.8	
			22	Mr. C K Santhosh	0.4	
			23	Mr. C V Mathew	0.8	

	24	Mr. C.J George	0.6	14
	25	Mr. C.M Thankarajan	1.2	
	26	Mr. Chacko Devassia	0.4	
	27	Mr. Chandran	0.4	
	28	Mr. Chandran Nair	0.2	
	29	Mr. Chandran Periyar	0.6	
	30	Mr. Chellapan Vellayan	0.4	
	31	Mr. Devassia	1.2	
	32	Mr. Devassia Joseph	0.4	
	33	Mr. Dharmarajan. C.V	0.4	
	34	Mr. Dinoop	1.2	
	35	Mr. Dominic Joseph	0.8	
	36	Mr. E J Mathew	0.5	
	37	Mr. E U John	0.8	
	38	Mr. E.U George	0.6	
	39	Mr. E.V Pareeth	0.28	
	40	Mr. Fracis Chacko	2	
	41	Mr. George John	0.6	
	42	Mr. Gopi Kochuraman	0.4	
	43	Mr. Gopi Mani	0.4	
	44	Mr. Haneefa P.I.	0.4	
	45	Mr. Harinadh	3.2	
	46	Mr. Harinath	3.2	
	47	Mr. Jacob K.S.	1.6	
	48	Mr. James Antony	1	
	49	Mr. James Mathew	1.2	
	50	Mr. James Mathew	1.2	
	51	Mr. James Varky	1.4	
	52	Mr. Jinoy	1	
	53	Mr. Jinu	0.4	
	54	Mr. John V.V.	0.3	
	55	Mr. Johnson Cherian	1.4	
	56	Mr. Jose	1	
	57	Mr. Jose Mathew	0.6	
	58	Mr. Joseph	0.8	
	59	Mr. Joseph	0.8	
	60	Mr. Joseph Antony	0.2	
	61	Mr. Joseph V V	1	
	62	Mr. Joshy James	1.2	
	63	Mr. Joy	1.2	
	64	Mr. Joy P A	2	
	65	Mr. Joy P I	0.46	
	66	Mr. Joy Thomas	2	

	67	Mr. K V Mathai	0.6	14
	68	Mr. Karunakaran P.K.	0.8	
	69	Mr. Krishnan C.K.	0.6	
	70	Mr. Kuttayi	0.4	
	71	Mr. Linoos K C	1.2	
	72	Mr. Lookka Lookka	1.6	
	73	Mr. M.S Rajan Sooryan	0.2	
	74	Mr. Manoj C	1.2	
	75	Mr. Mathew	0.4	
	76	Mr. Mathew A.K	0.6	
	77	Mr. Mathew Devassia	1.6	
	78	Mr. Mohan Thomas	0.6	
	79	Mr. Muhammad	0.6	
	80	Mr. Mujeeb Rahman	0.56	
	81	Mr. N.E Azeez	1.2	
	82	Mr. Narayanan	0.6	
	83	Mr. P M Muhammad	2	
	84	Mr. P.D Joseph	0.6	
	85	Mr. Panchan Raman	0.4	
	86	Mr. Pandyan Thevar	1	
	87	Mr. Pyli Joseph	0.8	
	88	Mr. Pyli Varghese (Thankachan)	0.8	
	89	Mr. Raghavan K.S.	0.28	
	90	Mr. Rajan Gopalan	0.6	
	91	Mr. Rajan Nagan	0.4	
	92	Mr. Rajan Nair	0.24	
	93	Mr. Rajan Narayanan	0.32	
	94	Mr. Rajan T.K.	1.2	
	95	Mr. Raju Gopalan	0.4	
	96	Mr. Ramachandran	0.2	
	97	Mr. Ramu	0.4	
	98	Mr. Ravi C.V.	0.4	
	99	Mr. Ravi Madhavan	0.16	
	100	Mr. Ravi Sudhakaran	0.4	
	101	Mr. Ravi Vellappan	0.4	
	102	Mr. Robert Mathew	1	
	103	Mr. Robin Joseph	2.8	
	104	Mr. Sainudheen	2	
	105	Mr. Sajimon K.P.	1.2	
	106	Mr. Sanoj	1.2	
	107	Mr. Santoshkumar P.T.	0.4	
	108	Mr. Sasi Nagan	0.4	

109	Mr. Sebastian	1	14
110	Mr. Shelly V.M	0.8	
111	Mr. Shibu	0.8	
112	Mr. Shiju Paul	1	
113	Mr. Sijo John	0.8	
114	Mr. Siju George	0.4	
115	Mr. Siju Mathai	0.8	
116	Mr. Sino Thomas	0.6	
117	Mr. Sivaji Babu	0.18	
118	Mr. Sreekumar S	1.6	
119	Mr. Subair	0.4	
120	Mr. Surendran Narayanan	0.4	
121	Mr. Suresh T.	0.4	
122	Mr. T A Jiji	0.8	
123	Mr. Thankachan	1.2	
124	Mr. Thankachan	0.8	
125	Mr. Thomas	0.8	
126	Mr. Thomas	1.6	
127	Mr. Thomas C V	1	
128	Mr. Tomy C J	0.6	
129	Mr. Tomy T.C	2	
130	Mr. V.J George	2	
131	Mr. Vijayakumar K.M.	90	
132	Mr. Vincent	1.2	
133	Mr. Vincent Pyli	0.8	
134	Mrs. Deepa Govindan	1.2	
135	Mrs. Kochurani Pily	0.16	
136	Mrs. Komalam Sasindran	0.4	
137	Mrs. Laly	0.36	
138	Mrs. Leela Sekharan	0.2	
139	Mrs. Madahavi	0.6	
140	Mrs. Moly Joseph	0.4	
141	Mrs. Nandini Kumaran	1.2	
142	Mrs. Princy Binu	0.8	
143	Mrs. Raji Rajendran	0.2	
144	Mrs. Reena Vilson	0.8	
145	Mrs. Rosamma K.J.	0.28	
146	Mrs. Saari Jayan	0.28	
147	Mrs. Sakunthala Ravi	0.6	
148	Mrs. Sasikala K.S.	1.2	
149	Mrs. Sujatha	0.8	
150	Mrs. Usha Sajimon	0.4	
	Total Area	215.72	

276	Group :	VECHOOR	S.No	Farmer	Area	AEU
	Group Leader :	PHILIP K.K	1	Mr. Aneesh Sasikumar	0.8	4
	Regional Council :	Manarcadu Social Service Society	2	Mr. Balachandran Nair	1.6	
	Village :	VECHOOR	3	Mr. George Joseph	0.6	
	Sub district :	Vaikom	4	Mr. Job	0.4	
	Block :	VAIKOM	5	Mr. John	0.608	
	District :	KOTTAYAM	6	Mr. Joseph John	2	
	Registration NO :	LG0900001295	7	Mr. Joseph N V	0.8	
			8	Mr. Joshy George	1	
			9	Mr. K P Parameswaran	1.488	
			10	Mr. K V Chellappan	0.4	
			11	Mr. M A Abraham	0.84	
			12	Mr. M J Varghese	0.544	
			13	Mr. M. J. Jacob	2.8	
			14	Mr. M.O. Vincent	0.988	
			15	Mr. Mathew Philip	1.4	
			16	Mr. Mathew Sebastian	1.6	
			17	Mr. Mohanan	0.56	
			18	Mr. P.N. Sabu	0.348	
			19	Mr. Philip K K	0.984	
			20	Mr. Raghavan	0.68	
			21	Mr. Rajappan	0.4	
			22	Mr. Ranjith Kumar	2	
			23	Mr. Santhan	1.5	
			24	Mr. Sunil Kumar V M	0.2	
			25	Mr. T V Manoharan	0.5	
			26	Mr. T.V. Raju	3.2	
			27	Mr. Thankappan	0.28	
			28	Mr. Thankappan M K	1.6	
			29	Mr. Vasu	0.8	
			30	Mr. Vijayank	1.8	
			31	Mrs. Ancy	1	
			32	Mrs. P.K Sumathy	0.4	
			33	Mrs. Santha Karunakaran	2.52	
				Total Area	36.64	
277	Group :	VELIYAM	S.No	Farmer	Area	AEU
	Group Leader :	MANOJ.V	1	Shri Gopalakrishna Pillai.N	0.2	9
	Regional Council :	VFPCK	2	Shri Manoj.V	1	
	Village :	VELIYAM	3	Shri Mohanan Pillai.K.R	1	
	Sub district :	Kottarakkara	4	Shri Raveendran Achary	1	
	Block :	KOTTARAKKARA	5	Shri Salim.B	0.47	
	District :	KOLLAM	6	Shri Sathyrajan Nair	0.2	
	Registration NO :	LG0900002004		Total Area	3.87	

	Group :	VELLANNUR	S.No	Farmer	Area	AEU
278	Group Leader :	KRISHNANKUTTY T.P.	1	Shri Baburaj	0.2	11
	Regional Council :	VFPCK	2	Shri K. Vasu	0.35	
	Village :	CHATHAMANGALAM	3	Shri Krishnankutty T.P.	0.2	
	Sub district :	Kozhikode	4	Shri Sahadevan	0.2	
	Block :	KUNNAMANGALAM	5	Shri Sivadasan	0.25	
	District :	KOZHIKODE		Total Area	1.2	
	Registration NO :	LG0900001738				
279	Group :	VELLILAMKANDAM	S.No	Farmer	Area	14
	Group Leader :	SEBASTIAN N.T	1	Mr. Antony Mathew	0.6	
	Regional Council :	Manarcadu Social Service Society	2	Mr. Appachan P J	0.6	
	Village :	AYYAPPANCOIL	3	Mr. Baby Chacko	0.4	
	Sub district :	Udumbanchola	4	Mr. Baby Mathew	2.8	
	Block :	KATTAPPANA	5	Mr. Baiju Joseph	0.4	
	District :	IDUKKI	6	Mr. Benny Joseph	1.2	
	Registration NO :	LG0900001131	7	Mr. Binoy Mathew	0.6	
			8	Mr. Dominic Paulose	0.4	
			9	Mr. George Joseph	4	
			10	Mr. James Thomas	1.6	
			11	Mr. James V J	0.8	
			12	Mr. Jobins A.B.	0.4	
			13	Mr. Joy Thomas	0.8	
			14	Mr. Kuriyakose Mathew	0.8	
			15	Mr. Kuttapan N R	0.28	
			16	Mr. Lalichan Thomas	0.9	
			17	Mr. Manoj V K	0.4	
			18	Mr. Mathai Devassia	0.32	
			19	Mr. Mohanan K K	0.4	
			20	Mr. Muralidharan P K	0.6	
			21	Mr. P K Prabakaran	1.4	
			22	Mr. P P Vishwanathan	0.6	
			23	Mr. P.J James	0.8	
			24	Mr. Rajesh K J	1.4	
			25	Mr. Roy V Eppachan	0.48	
			26	Mr. Sasi P.N	0.6	
			27	Mr. Sebastine Mani	1.2	
			28	Mr. Sebastine N T	0.56	
			29	Mr. Shijo Joseph	1.2	
			30	Mr. Sibychen K D	0.8	
			31	Mr. Sunnychan Thomas	1	
			32	Mr. Thankachan Joseph	0.8	
			33	Mr. Viji Pushpanath	0.8	

			34	Mr. Vishvambaran G K	0.2	
			35	Mrs. Ammini Raju	0.4	14
			36	Mrs. Elikutty Devassia	0.2	
			37	Ms. Valsalakumari M B	0.8	
				Total Area	31.54	
280	Group :	VEMBAYAM	S.No	Farmer	Area	AEU
	Group Leader :	MURALEEDHARAN NAIR	1	Shri Anilkumar B	0.1	9
	Regional Council :	VFPCK	2	Shri Ashokan.K	0.1	
	Village :	MANIKKAL	3	Shri Muraleedharan Nair	0.2	
	Sub district :	Nedumangad	4	Shri Santhosh Kumar K	0.1	
	Block :	NEDUMANGAD	5	Shri Venu A	0.1	
	District :	TRIVANDRUM		Total Area	0.6	
	Registration NO :	LG0900018012				
281	Group :	VFPCKMEENACHIL	S.No	Farmer	Area	AEU
	Group Leader :	LIJU JOSE	1	Mr. Emmanuel Tharappel	7.808	9
	Regional Council :	VFPCK	2	Mr. George Antony	0.4	
	Village :	MEENACHIL	3	Mr. Jerard Antony	1.2	
	Sub district :	Meenachil	4	Mr. Jose Joseph	3.38	
	Block :	LALAM	5	Mr. Kuriavhen K.Kuruvilla	1.6	
	District :	KOTTAYAM	6	Shri Liju Jose	4.1	
	Registration NO :	LG0900001920		Total Area	18.488	
282	Group :	VFPCKPANACKAPALAM	S.No	Farmer	Area	AEU
	Group Leader :	JOHNY JOSEPH	1	Mr. E A Augustine	0.46	12
	Regional Council :	VFPCK	2	Mr. Johny Joseph	0.1	
	Village :	THALAPPALAM	3	Mr. Joseph Mathew	0.2	
	Sub district :	Meenachil	4	Mr. Tom.L.Nelson	0.2	
	Block :	ERATTUPETTA	5	Mr. V.T.George	0.4	
	District :	KOTTAYAM		Total Area	1.36	
	Registration NO :	LG0900002018				
283	Group :	VILAMANA	S.No	Farmer	Area	AEU
	Group Leader :	SHAJI K V	1	Mr. Shaji K V	0.24	15
	Regional Council :	VFPCK	2	Shri Devadas P	0.2	
	Village :	PAYAM	3	Shri Rajeevan P	0.3	
	Sub district :	Thalassery	4	Shri Ramachandran K	0.2	
	Block :	IRITTY	5	Shri Rameshan K	0.1	
	District :	KANNUR		Total Area	1.04	
	Registration NO :	LG0900001810				
284	Group :	VITHENESSERY	S.No	Farmer	Area	AEU
	Group Leader :	PRABHAKARAN.A	1	Mr. P.Rajan	0.3	22
	Regional Council :	VFPCK	2	Mr. Rajan.R	0.3	
	Village :	VALLANGHY	3	Mr. Sankunni	0.3	

	Sub district :	Chittur	4	Mr. Saseendran.K	0.3	
	Block :	NEMMARA	5	Mr. Sethumadhavan	0.4	22
	District :	PALAKKAD	6	Mr. T.D.Sudhakaran	0.3	
	Registration NO :	LG0900003112	7	Mr. Vasu.N	0.3	
			8	Shri Prabhakaran.A	0.3	
				Total Area	2.5	
285	Group :	WESTELERY2	S.No	Farmer	Area	AEU
	Group Leader	GEORGE MATHEW:	1	Shri Babu John	1.2	15
	Regional Council :	VFPCCK	2	Shri Baby N J	1.7	
	Village :	WEST ELERI	3	Shri C T Thomas	2	
	Sub district :	Hosdurg	4	Shri Devasya P P	0.4	
	Block :	NILESHWAR	5	Shri George Mathew	0.5	
	District :	KASARGOD	6	Shri Johny P M	0.8	
	Registration NO :	LG0900001482	7	Shri Joji P Daniel	1.2	
			8	Shri Jose Madappalli	1.6	
			9	Shri Madhavan	4	
			10	Shri Micheal M F	1.6	
			11	Shri P C Philip	1.2	
			12	Shri Philipose Mathew	0.5	
			13	Shri Sabu Thomas	2	
				Total Area	18.7	

APPENDIX-II



KERALA AGRICULTURE UNIVERSITY
College of Agriculture, Vellayani

INTERVIEW SCHEDULE

Title: Organic farming as a strategy for climate change adaptation – an exploratory study

Respondents No :

General Information:

District:

Panchayath:

1. Name & Address of the respondent:
2. Whether you are an organic farmer? Yes/ No
 - (i) If yes, how long you have been in organic farming (in years):
 - (ii) Is there any reason for adopting/changing to organic farming?

A. SOCIO-PSYCHOLOGICAL AND PERSONAL CHARACTERISTICS

1. **Age** (in completed years):
2. **Educational level** : Illiterate / Primary school /High school /Higher secondary/ College
3. **Land holding**: <1 acre/ 1-5 acres/ >5 acres
4. **Annual Income (Rs.)**
 - a) ≤10,000 b) 10,001 to 25,000 c) 25,001 to 50,000 d) 50,001 to 1,00,000 e) >1,00,000
5. **Farming experience** : Total Farming experience (in years)
6. **Socio-political participation**
 - a) Without any membership b) Membership in one or more
 - c) Official position in one or more d) Active office bearer
7. **Mass media exposure**: Please indicate frequency of utilisation of the following:

Sl. No.	Category	Frequency			
		Most often	Often	Sometimes	Never
1	News paper				
2	Radio				
3	Television				
4	Agricultural publications				
5	Agri seminars/ exhibitions				
6	Internet/Social networking				

8. Closeness with agricultural support system:

Sl. No.	Category	Frequency			
		Most often	Often	Sometimes	Never
1	Agricultural Officer				
2	Agriculture Assistant				
3	Agricultural University/College/Scientist				
4	Panchayat				
5	Co-operative society				
6	Bank field officer				
7	Input dealers				
8	Others if any				

9. Self-confidence

What is your degree of agreement to the following?

(SA- Strongly Agree ; A- Agree; UD- Undecided; DA- Disagree ; SDA- Strongly Disagree)

Sl No:	Statements	SA	A	UD	DA	SDA
1	I am generally confident of my own abilities.					
2	I feel no obstacles can stop me from achieving my final goal.					
3	I am bothered by inferiority feelings.					
4	I do not have initiative.					
5	I usually work out things for myself rather than to show some one.					
6	I get discouraged easily.					
7	Life is a strain for me in much of the time.					
8	I often find myself worrying about something or other.					

10. Farming Commitment

What is your degree of agreement to the following?

(SA- Strongly Agree ; A- Agree; UD- Undecided; DA- Disagree ; SDA- Strongly Disagree)

Sl No:	Statements	SA	A	UD	DA	SDA
1	I am proud that I am a farmer.					
2	If I were given a job in city, I quit farming					
3	I feel that people simply talk of farming problem and they forget that everything depends on how they manage it.					

4	I am not willing to take a great deal of effort to develop my farm.					
5	I am prepared to face any problem to stay permanently in agriculture.					
6	I wish my children to be govt. employees rather than a farmer like me.					
7	There is not much to be gained by sticking to farming permanently.					
8	For me farming is the best profession, when compared to other occupations.					
9	I continue farming simply as it is not socially respected to sell away my ancestral property.					
10	I believe that agricultural vocation alone pays in long run.					

B. INTEGRATED ADAPTIVE CAPACITY INDEX

- I. BIO-PHYSICAL** - The biological and physical characteristics/ components presently available in the farm contributing to climate change adaptation/ sustainable agricultural production.

a. Please select the best suitable for your farm:

Sl. No	Statements	Most often	Often	Sometimes	Never
1	The locality of my farm is vulnerable to climatic variability and extreme climatic events				
2	The soil of my farm is suitable to raise all types of crops.				
3	The water resources available in my farm can sufficiently meet the water requirements throughout the crop growth.				
4	Available water can be retained in the soil for sufficient period of time.				
5	The fertility status of the soil is adequately maintained throughout the crop period				
6	I am getting a reasonable/ standard yield from the crops cultivated				
7	The inputs required for raising of crops are adequately available				
8	Incidents of pests and diseases is very negligible/ can be controlled easily without affecting the yield				
9	I own adequate farm implements/machines suitable for raising crops				
10	My land is kept fallow due to climatic stresses				

II. AGRICULTURAL- The agronomic/ crop production, protection and management practices / components contributing to climate change adaptation (Climate-smart agricultural practices).

Indicate whether the following practices are followed in your farm, which are effective for climate change adaptation.

Sl no.	Crop production practices	Crop protection practices	Crop management practices
1	Crop rotation	Use of bio-control agents like: pseudomonas, trichoderma etc.	Changing cropping pattern according to climate change/ variability
2	Application of organic manures/ bio-fertilizers	Conservation of natural enemies	Diversified land use
3	Intercropping/ Mixed farming	Use of traps/ repellents	Selection of healthy planting material
4	Mulching	Hand/mechanical weeding	Use of climate resilient crops/ varieties
5	Legume integration	Use of farmer made preparations from natural ingredients	Soil testing based nutrient management
6	Integrated soil and water conservation measures	Field sanitation	Integration of live stock component
7	Timely Irrigation/ drainage	Soil sterilization / solarisation	Selection of crops according to market demand
8	Soil acidity /pH management- application of soil amendments	Live fencing/ protection wall	Use of alternate means of marketing
9	Raising and incorporation of green manure leaves/ crops	Protected cultivation/ rain shelter	Management of harvest & post harvest handling
10	Summer ploughing	Cover cropping	Processing and value addition

III. ECOLOGICAL- The ecological components/ factors, which help the farmer respondent to cope up with climate change variability for sustaining farming.

Please indicate your appropriate response:

Sl. No.	Statements	Most often	Often	Some times	Never
1	My farm is a rich habitat of different varieties and species of plants, animals, birds and other organisms				
2	In my farm there is integration of agro-forestry				
3	I am particularly careful in undertaking farming with minimum pollution to soil, water and atmosphere				
4	In my farm there is enough population of earthworms, butterflies, honey bees, natural enemies etc. can be seen				
5	I am not using any chemicals for farming				
6	I am adopting sustainable waste management measures like bio gas, vermi-composting etc.				

7	I am efficiently utilizing the available resources by recycling and reuse				
8	I am preparing the manures and other inputs in my farm itself.				
9	The available solar energy is effectively utilized for farming				
10	I am not disturbing the natural vegetation for farming				

IV. SOCIO- ECONOMIC - The social and economic components / factors contributing to climate change adaptation of the farm.

Please indicate your appropriate response:

Sl. No	Statements	Most often	Often	Some times	Never
1	Basic infrastructure, health and sanitation services are available for me and my family				
2	I am getting year round income from farming				
3	I am getting alternate income from other enterprises also				
4	I am getting opportunities for lifelong learning on farm information				
5	I try to share the knowledge and information related to farming with fellow farmers/ farmer groups				
6	I am able to get credit facilities for farming				
7	I have taken crop insurance policy				
8	My family members are helping in farming activities				
9	I am able to sell my farm produces without much difficulty				
10	I get financial improvement through farming				

V. TECHNOLOGICAL- Innovative techniques and practices contributing to climate change adaptation process.

Please indicate your appropriate response:

Sl no.	Statements	Most often	Often	Some times	Never
1	I am utilising weather and climate information systems for farming				
2	I feel that climate change is a reality.				
3	I am using micro irrigation techniques like drip/ sprinkler/ bubbler in my farm				
4	I am keen to adopt innovative farming technologies				
5	I am using rain water harvesting structures/ water recharging measures ensuring effective utilisation of available water				
6	I am using machines for undertaking different farm operations				

7	I am using indigenous technologies related to climate change adaptation				
8	I am preserving different varieties of crops, trying varietal crossing/ plant breeding experiments				
9	I am participating in trainings/ seminars/ exhibitions/ internet for getting knowledge about agricultural technologies.				
10	I am keeping a record of technical knowledge and information for referring as and when required.				

VI. MANAGERIAL- The respondent's ability for ensuring proper execution of farm operations and surveillance against possible damage to crops due to climate variability / change.

Please indicate your appropriate response:

Sl No:	Statements	Most Often	Often	Some times	Never
1	Each farm operations from selection of crops to marketing are undertaken with proper planning and expert consultancy, well in advance				
2	I am good at taking timely decisions.				
3	I estimate the financial requirements and operation wise expenditure of each crop in advance				
4	I am arranging labourers well in advance for timely completion of farming activities				
5	I myself do/ supervise all my farm operations				
6	I prepare calendar of operations for farming and follow it accordingly				
7	I am taking pain to closely watching my field as well as crops and if there is any problem, remedial measures are taken then and there				
8	I am collecting possible information regarding farming and carefully selecting the best				
9	I am adopting different marketing strategies assuring maximum profit				
10	I am utilizing agri-business opportunities				

C. AGRO-ECOLOGICAL PROFILE OF THE FARM**a) Cropping pattern and Crop production details**

Crops grown	Area (cents)	Cost of Cultivation (Rs)	Production (Kg)	Returns (Rs)

b) Live stock component

Do you have livestock? Yes/ No

Buffalo/ Bullock/ Cow /Calf/ Goat /Poultry/ Others please specify:

Whether they are utilized for farming?

c) Cost Benefit Ratio

i. Total income from farming (Last year)

ii. Total expenditure for farming

d) Agri based units:

Livestock/ poultry farm	Ornamental birds/fish	Honey bee rearing	Vermi compost/ farming input production	Mushroom cultivation	Nursery & gardening	Value added products & sales	Others if any

e) Identifying indigenous technologies / practices adopting for coping with changing climatic parameters. Give details.

Sl. No.	ITK Practices adopted	Effectiveness

f) Other Special characteristics of the farm:

D. Climatic factors (Last 10 years):

Sl. No.	Category	Frequency			
		Most often	Often	Sometimes	Never
1	Incidence of extreme events (droughts/floods storms/ Landslides)				
2	Changes in the precipitation pattern (in terms of timing, duration and intensity of rainfall)				
3	Changes in temperature pattern				
4	Soil /water/ coastal erosion				
5	Pest and disease outbreaks				
6	Any others- specify				

F. Constraints as perceived by farmer: What are the constraints you are facing as a farmer, for coping with climatic changes/ variability?

APPENDIX-III



കേരള കാർഷിക സർവകലാശാല
വിപ്പാർട്ട്മെന്റ് ഓഫ് അഗ്രികൾച്ചറൽ എക്സ്റ്റൻഷൻ,
കോളേജ് ഓഫ് അഗ്രികൾച്ചർ, വെള്ളായണി, തിരുവനന്തപുരം

അഭിമുഖ ചോദ്യാവലി

**വിഷയം: കാലാവസ്ഥാവ്യതിയാനവുമായി
പൊരുത്തപ്പെട്ടുപോകുവാനുള്ള ഉപായമായി ജൈവകൃഷി - ഒരു
വിശകലന പഠനം**

പൊതുവിവരങ്ങൾ

ജില്ല : പഞ്ചായത്ത് :

1. പേരും വിലാസവും :
2. ജൈവകർഷകനാണോ : അതെ / അല്ല എത്രനാളായി ജൈവകൃഷി ചെയ്യുന്നു?

A. സാമൂഹ്യ-മാനസിക-വ്യക്തിഗത വിവരങ്ങൾ (SOCIO-PSYCHOLOGICAL & PERSONAL CHARACTERISTICS)

1. വയസ്സ് :
2. വിദ്യാഭ്യാസം:: പ്രൈമറി സ്കൂൾ /ഹൈസ്കൂൾ /ഹയർസെക്കണ്ടറി/ കോളേജ്
3. കൃഷിയിട വിസ്തീർണ്ണം: ഒരേക്കറിൽ കുറവ്/ 1-5 ഏക്കർ/ 5ഏക്കറിൽ കൂടുതൽ
4. വാർഷിക വരുമാനം (രൂപ)
 - a) ≤10,000 b) 10,001 to 25,000 c) 25,001 to 50,000 d) 50,001 to 1,00,000 e) >1,00,000
5. എത്ര വർഷമായി കൃഷി ചെയ്യുന്നു? :
6. സാമൂഹ്യ-രാഷ്ട്രീയ പങ്കാളിത്തം
 - a) സാമൂഹ്യ-രാഷ്ട്രീയ ക്ഷേമ പ്രവർത്തനങ്ങളിൽ പങ്കെടുക്കാറുണ്ടോ ഉണ്ട്/ഇല്ല
 - b) ഏതെങ്കിലും സാമൂഹ്യ-രാഷ്ട്രീയ സംഘടനയിൽ അംഗമാണോ ആണ്/അല്ല
 - (1) എത്ര സംഘടനകളിൽ അംഗമാണ് ഒന്ന്/ഒന്നിലധികം
 - (2) സംഘടനയിലെ സ്ഥാനം - അംഗം/ഔദ്യോഗിക ഭാരവാഹി

7. ബഹുജനമാധ്യമ ഉപയോഗം (Mass media exposure)

താഴെ കൊടുത്തിരിക്കുന്ന ബഹുജനമാധ്യമങ്ങൾ എപ്പോഴെല്ലാം ഉപയോഗിക്കുന്നു?

ക്രമ നമ്പർ	ബഹുജനമാധ്യമം	പതിവായി/ എല്ലാ ദിവസവും	മിക്കപ്പോഴും	വല്ലപ്പോഴും	ഒരിക്കലുമില്ല
1	പത്രം				
2	റേഡിയോ				
3	ടെലിവിഷൻ				
4	കാർഷിക പ്രസിദ്ധീകരണങ്ങൾ				
5	കാർഷിക പ്രദർശനങ്ങൾ				
6	ഇൻറർനെറ്റ് / സോഷ്യൽ കൂട്ടായ്മകൾ				

8. കൃഷി അനുബന്ധ മേഖലകളുമായുള്ള സാമീപ്യം (Closeness with agricultural support system):

കാർഷിക ആവശ്യങ്ങൾക്കായി താഴെ പറയുന്ന മേഖലകളുമായുള്ള സമ്പർക്കം രേഖപ്പെടുത്തുക.

ക്രമ നമ്പർ	വിഭാഗം	എല്ലായ്പ്പോഴും	മിക്കപ്പോഴും	ചിലപ്പോൾ	ഒരിക്കലുമില്ല
1	കൃഷി ഓഫീസർ				
2	കൃഷി അസിസ്റ്റന്റ്				
3	കൃഷിവിജ്ഞാന കേന്ദ്രം				
4	കാർഷികസർവ്വകലാശാല/ കോളേജ്				
5	വി.എഫ്.പി.സി.കെ				
6	പഞ്ചായത്ത്				
7	കോഓപ്പറേറ്റീവ് സൊസൈറ്റി				
8	കാർഷിക ഉൽപാദനോപാധി വിതരണക്കാർ				

9. ആത്മവിശ്വാസം (Self-confidence)

ഉചിതമായ അഭിപ്രായം രേഖപ്പെടുത്തുക:

ക്രമ നമ്പർ	പ്രസ്താവന	ശക്തമായി യോജിക്കുന്നു	യോജിക്കുന്നു	തീരുമാനമില്ല	വിയോജിക്കുന്നു	ശക്തമായി വിയോജിക്കുന്നു
1	എൻറെ കഴിവുകളിൽ എനിക്ക് ഉറച്ച വിശ്വാസമുണ്ട്.					
2	എൻറെ ലക്ഷ്യത്തിലെത്തുന്നതിൽ നിന്നും ഒരു പ്രതിസന്ധിക്കും എന്നെ തടയാനാവില്ല.					
3	അപകർഷതാബോധം എന്നെ അലട്ടിക്കൊണ്ടിരിക്കുന്നു.					
4	ഞാൻ ഒന്നിനും മുൻകൈയെടുക്കാറില്ല.					
5	എൻറെ ആവശ്യങ്ങൾക്കനുസരിച്ചാണ് ഞാൻ പ്രവർത്തിക്കാറുള്ളത്, അല്ലാതെ മറ്റുള്ളവരെ കാണിക്കുവാൻ വേണ്ടിയല്ല.					
6	എന്നെ പെട്ടെന്ന് നിരൂൽസാഹസപ്പെടുത്താൻ കഴിയും.					
7	ജീവിതം ഒരു ബാധ്യതയാണെന്ന് മിക്കപ്പോഴും എനിക്ക് തോന്നാറുണ്ട്.					
8	ഞാൻ എന്തിനെയെങ്കിലും കുറിച്ചു മിക്കപ്പോഴും വ്യാകുലപ്പെട്ടുകൊണ്ടേയിരിക്കും.					

10. കൃഷിയോടുള്ള പ്രതിബദ്ധത (Farming Commitment)

ഉചിതമായ അഭിപ്രായം രേഖപ്പെടുത്തുക:

ക്രമ നമ്പർ	പ്രസ്താവന	ശക്തമായി യോജിക്കുന്നു	യോജിക്കുന്നു	തീരുമാനമില്ല	വിയോജിക്കുന്നു	ശക്തമായി വിയോജിക്കുന്നു
1	ഒരു കൃഷിക്കാരനായതിൽ ഞാൻ അഭിമാനം കൊള്ളുന്നു					
2	പട്ടണത്തിൽ ഒരു ജോലി ലഭിക്കുന്നപക്ഷം ഞാൻ കൃഷി ഉപേക്ഷിക്കും					
3	ശരിയായ രീതിയിൽ നടത്തിക്കൊണ്ട് പോയാൽ കൃഷി നഷ്ടമാകില്ല.					
4	എൻറെ കൃഷിയിടം വികസിപ്പിക്കുന്നതിനുവേണ്ടി കൂടുതൽ അധ്വാനിക്കുവാൻ എനിക്ക് താൽപ്പര്യമില്ല.					
5	കൃഷിയിൽ സ്ഥിരമായി നിൽക്കുന്നതിനുവേണ്ടി എന്തു പ്രശ്നത്തെയും നേരിടാൻ ഞാൻ തയ്യാറാണ്					
6	മക്കൾ കൃഷിക്കാരാകുന്നതിനേക്കാൾ, ഗവൺമെന്റ് ജോലിക്കാരാകണമെന്നതാണ് എൻറെ ആഗ്രഹം.					
7	കൃഷിയിൽ സ്ഥിരമായി നിൽക്കുന്നതിലൂടെ വലിയ നേട്ടമൊന്നുമില്ല.					
8	എന്നെ സംബന്ധിച്ചിടത്തോളം, കൃഷിയാണ് മറ്റേത് തൊഴിലിനേക്കാളും നല്ലത്.					
9	പൂർവ്വിക സമ്പത്ത് വിൽക്കുന്നത് ശരിയല്ലല്ലോ എന്നോർത്തിട്ടാണ് കൃഷിയിൽ ഞാനിപ്പോഴും തുടരുന്നത്.					
10	കൃഷിയിലൂടെയുള്ള വരുമാനമാണ് ശാശ്വതമായി നിലനിൽക്കുന്നതെന്ന് ഞാനുറച്ചു വിശ്വസിക്കുന്നു.					

B. കാലാവസ്ഥാവ്യതിയാനവുമായി പൊരുത്തപ്പെടുപോകുവാനുള്ള കഴിവ്

(INTEGRATED ADAPTIVE CAPACITY INDEX)

I. ജൈവ-ഭൗതിക (Bio-Physical) ഘടകങ്ങൾ

താഴെ കൊടുത്തിരിക്കുന്നതിൽ നിന്നും താങ്കളുടെ കൃഷിയിടത്തിന് ഏറ്റവും യോജിക്കുന്നവ തിരഞ്ഞെടുക്കുക.

ക്രമ നമ്പർ	സൂചകങ്ങൾ	എല്ലായ്പ്പോഴും	മിക്കപ്പോഴും	ചിലപ്പോൾ	ഒരിക്കലുമില്ല
1	കൃഷിയിടത്തിന്റെ സ്ഥലപരമായ പ്രത്യേകതകൾ കാലാവസ്ഥാവ്യതിയാനവുമായി ബന്ധപ്പെട്ട ദോഷഫലങ്ങൾ പെട്ടെന്ന് ബാധിക്കുന്ന തരത്തിലുള്ളതാണോ?				
2	താങ്കളുടെ കൃഷിയിടം മിക്കവാറും എല്ലാ വിളകളും കൃഷിചെയ്യുവാൻ അനുയോജ്യമാണോ?				
3	വർഷം മുഴുവനും കൃഷിക്ക് ആവശ്യമായ വെള്ളം നൽകുന്നതിനായുള്ള ജലസ്രോതസ്സുകൾ കൃഷിയിടത്തിൽ ലഭ്യമാണോ?				
4	ലഭ്യമായ വെള്ളം പെട്ടെന്ന് വാർന്നു പോകാതെ മണ്ണിൽ തന്നെ നിലനിർത്താൻ കഴിയുന്നുണ്ടോ?				
5	കൃഷിയിടത്തിലെ മണ്ണിന്റെ ഫലപുഷ്ടി സുസ്ഥിരമായി നിലനിർത്താൻ കഴിയുന്നുണ്ടോ?				
6	കൃഷിയിൽനിന്നും ആവശ്യത്തിന് വിളവ് ലഭിക്കുന്നുണ്ടോ?				
7	കൃഷിയ്ക്കാവശ്യമായ ഉപാധികൾ ആവശ്യാനുസരണം ലഭിക്കാറുണ്ടോ?				
8	കൃഷിയെ ബാധിക്കുന്ന കീടരോഗ ബാധയുടെ തോത് വളരെ കുറവാണോ?				
9	കൃഷിയ്ക്കാവശ്യമായ ഉപകരണങ്ങൾ/ യന്ത്രങ്ങൾ സ്വന്തമായി ഉണ്ടോ?				
10	കാലാവസ്ഥാ പ്രശ്നങ്ങൾ കാരണം കൃഷിഭൂമി തരിശായി ഇട്ടിട്ടുണ്ടോ?				

II. കാർഷിക (AGRICULTURAL) ഘടകങ്ങൾ

കാലാവസ്ഥാവ്യതിയാനവുമായി പൊരുത്തപ്പെടുവാൻ കഴിയുന്ന ചില കൃഷിമുറകൾ താഴെ കൊടുത്തിരിക്കുന്നു. ഇവയിലേതൊക്കെ താങ്കളുടെ കൃഷിയിടത്തിൽ അവലംബിക്കുന്നുണ്ട്?

1	വിള പരിക്രമണം	11	ജീവാണു/ മിത്രസൂക്ഷ്മ ജീവി വളങ്ങളുടെ ഉപയോഗം	21	കാലാവസ്ഥാമാറ്റം അനുസരിച്ച് കൃഷിരീതികളിൽ മാറ്റം വരുത്തൽ
2	ജൈവവള പ്രയോഗം	12	മിത്രപ്രാണികളുടെ സംരക്ഷണം	22	കൃഷി വൈവിധ്യവൽക്കരണം
3	സമ്മിശ്ര കൃഷി / ഇടവിള കൃഷി	13	കെണികളുടെ ഉപയോഗം	23	ആരോഗ്യമുള്ള നടീൽ വസ്തുക്കളുടെ ഉപയോഗം
4	പുതയിടൽ	14	യാന്ത്രിക / ജൈവ കളനിയന്ത്രണം	24	പ്രതിരോധ / സഹനശക്തിയുള്ള ഇനങ്ങളുടെ ഉപയോഗം
5	പയറുവർഗ്ഗവിളകളുടെ ഉൾപ്പെടുത്തൽ	15	പ്രാദേശികമായ സ്വന്തമായ ജൈവനിയന്ത്രണ മാർഗ്ഗങ്ങൾ	25	മണ്ണുപരിശോധനയുടെ അടിസ്ഥാനത്തിലുള്ള കൃഷിപരിപാലനം
6	സംയോജിത മണ്ണ്-ജല സംരക്ഷണ മാർഗ്ഗങ്ങൾ	16	കൃഷിയിടത്തിലെ ശുചിത്വപരിപാലനം	26	വളർത്തുമൃഗങ്ങളെ ഉൾപ്പെടുത്തിയുള്ള കൃഷി
7	വിളകളുടെ വളർച്ചയുടെ നിർണ്ണായക ഘട്ടങ്ങളിലുള്ള ജലസേചനം	17	സൂര്യതാപീകരണം	27	വിപണനസാധ്യതയനുസരിച്ചുള്ള കൃഷി
8	അമ്ളത (പി എച്ച്) നിയന്ത്രണം വഴിയുള്ള മണ്ണ് പരുവപ്പെടുത്തൽ - കുമ്മായപ്രയോഗം	18	ജൈവവേലി / മതിൽ/ കൃഷിയിട സംരക്ഷണം	28	പലതരം വിപണനമാർഗ്ഗങ്ങളുടെ ഉപയോഗം
9	മണ്ണിരക്കുമോസ്റ്റ്/ പച്ചിലവളപ്രയോഗം	19	സംരക്ഷിതകൃഷി- മഴമറ	29	വിളവെടുപ്പും അതിനുശേഷമുള്ള കാര്യങ്ങളുടെയും നിർവ്വഹണം
10	വേനൽക്കാല ഉഴവ്	20	ആവരണവിളകൾ	30	മൂല്യവർദ്ധിത ഉൽപ്പന്നങ്ങളുടെ നിർമ്മാണം

III. പാരിസ്ഥിതിക (ECOLOGICAL) ഘടകങ്ങൾ

ഉചിതമായ അഭിപ്രായം രേഖപ്പെടുത്തുക:

ക്രമ നമ്പർ	ചോദ്യങ്ങൾ	എല്ലായ്പ്പോഴും	മിക്കപ്പോഴും	ചിലപ്പോൾ	ഒരിക്കലുമില്ല
1	സസ്യങ്ങളുടേയും മറ്റ് ജീവജാലങ്ങളുടേയും വിവിധങ്ങളായ ഇനങ്ങൾ താങ്കളുടെ കൃഷിയിടത്തിൽ കാണാറുണ്ടോ?				
2	താങ്കളുടെ കൃഷിയിടത്തിൽ കാർഷിക വനവൽക്കരണമാർഗ്ഗങ്ങൾ അവലംബിക്കാറുണ്ടോ?				
3	മണ്ണ്, ജലം, വായു, അന്തരീക്ഷം മുതലായവയെ മലിനമാക്കാതെയുള്ള കൃഷിരീതിയാണോ താങ്കളുടേത്?				
4	മണ്ണിര, ചിത്രശലഭങ്ങൾ, തേനീച്ചകൾ, മിത്രകീടങ്ങൾ മുതലായവയുടെ സാന്നിധ്യം താങ്കളുടെ കൃഷിയിടത്തിൽ കാണാറുണ്ടോ?				
5	വിളകളുടെ രോഗകീട നിയന്ത്രണത്തിനായി രാസ കീടനാശിനികൾ ഉപയോഗിക്കാറുണ്ടോ?				
6	സുസ്ഥിരമായ മാലിന്യനിർമ്മാർജ്ജനം - ബയോഗ്യാസ് യൂണിറ്റ് /പരിസ്ഥിതി സൗഹാർദ്ദ/തദ്ദേശ ഉപാധികളുടെ ഉപയോഗം				
7	സ്രോതസ്സുകളുടെ പുനരുപയോഗം- ലഭ്യമായ പാഴ്ജലം കൃഷിക്കുവേണ്ടി തിരിച്ചു വിടാറുണ്ടോ?				
8	കൃഷിയിടത്തിൽതന്നെയുള്ള വളം നിർമ്മാണരീതിയാണോ പിന്തുടരുന്നത്?				
9	സൗരോർജ്ജ ഇന്ധനം ഉപയോഗിക്കാറുണ്ടോ?				
10	പ്രകൃതി വിഭവങ്ങൾക്ക് ദോഷകരമാകാത്ത രീതിയിലാണ് താങ്കൾ കൃഷി ചെയ്യുന്നത് എന്നുറപ്പുണ്ടോ?				

IV. സാമൂഹ്യ - സാമ്പത്തിക (SOCIO- ECONOMIC) ഘടകങ്ങൾ

താഴെ പറയുന്നവയോട് ഏറ്റവും അനുയോജ്യമായ അഭിപ്രായം രേഖപ്പെടുത്തുക.

ക്രമ നമ്പർ	ചോദ്യങ്ങൾ	എല്ലായ്പ്പോഴും	മിക്കപ്പോഴും	ചിലപ്പോൾ	ഒരിക്കലുമില്ല
1	പ്രാഥമിക ആരോഗ്യ-ശുചിത്വ-സേവന സൗകര്യങ്ങൾ ലഭിക്കാറുണ്ടോ?				
2	കൃഷിയിലൂടെ വർഷം മുഴുവനും വരുമാനം ലഭിക്കാറുണ്ടോ?				
3	കൃഷി അനുബന്ധ മേഖലകളിൽനിന്നുമുള്ള വരുമാനം ലഭിക്കാറുണ്ടോ?				
4	കൃഷിയെക്കുറിച്ചുള്ള അറിവുസമ്പാദനത്തിനുള്ള അവസരങ്ങൾ ലഭിക്കുന്നുണ്ടോ?				
5	കൃഷിയറിവുകൾ മറ്റുള്ളവരുമായി പങ്കുവയ്ക്കാറുണ്ടോ?				
6	സർക്കാരിൽനിന്നും കൃഷിക്കുവേണ്ടി സാമ്പത്തിക -സേവന സഹായങ്ങൾ/ സബ്സിഡി ലഭിക്കാറുണ്ടോ?				
7	ഏതെങ്കിലും വിള ഇൻഷുറൻസ് പദ്ധതിയിൽ അംഗത്വം എടുത്തിട്ടുണ്ടോ?				
8	കുടുംബത്തിലെ അംഗങ്ങൾ കാർഷിക പ്രവർത്തനങ്ങളിൽ സഹായിക്കാറുണ്ടോ?				
9	കാർഷിക ഉത്പന്നങ്ങളുടെ വിപണനസൗകര്യം ലഭിക്കാറുണ്ടോ?				
10	കൃഷികൊണ്ട് സാമ്പത്തിക ഉയർച്ച നേടിയിട്ടുണ്ടോ?				

V. സാങ്കേതിക (TECHNOLOGICAL) ഘടകങ്ങൾ:

ഉചിതമായ അഭിപ്രായം രേഖപ്പെടുത്തുക:

ക്രമ നമ്പർ	ചോദ്യങ്ങൾ	എല്ലായ്പ്പോഴും	മിക്കപ്പോഴും	ചിലപ്പോൾ	ഒരിക്കലുമില്ല
1	കൃഷിക്കുവേണ്ടി കാലാവസ്ഥാവിവരങ്ങളെ ആശ്രയിക്കാറുണ്ടോ?				
2	കാലാവസ്ഥാവ്യതിയാനത്തെക്കുറിച്ച് ബോധവാനാണോ?				
3	സൂക്ഷ്മ/ കണിക ജലസേചന മാർഗ്ഗങ്ങൾ ഉപയോഗിക്കുന്നുണ്ടോ?				
4	കൃഷിയിലെ നൂതന സാങ്കേതിക വിദ്യകൾ അറിയുവാനും സ്വന്തം കൃഷിയിടത്തിൽ പ്രയോഗിക്കുവാനും ശ്രമിക്കാറുണ്ടോ?				
5	താങ്കളുടെ കൃഷിയിടത്തിൽ മഴവെള്ളസംഭരണി/ മഴക്കുഴികൾ നിർമ്മിച്ചിട്ടുണ്ടോ?				
6	കാർഷിക പ്രവർത്തനങ്ങൾക്കായി യന്ത്രങ്ങൾ ഉപയോഗിക്കാറുണ്ടോ?				
7	കാലാവസ്ഥാ വ്യതിയാനം നേരിടുന്നതിനുകുന്ന പ്രാദേശിക സാങ്കേതികവിദ്യകൾ ഉപയോഗിക്കാറുണ്ടോ?				
8	കാർഷിക ജനിതകവൈവിധ്യം സംരക്ഷിക്കുന്നുണ്ടോ?				
9	കാർഷിക സാങ്കേതിക വിജ്ഞാനം നേടുന്നതിനായി പരിശീലനപരിപാടികൾ, കാർഷിക പ്രസിദ്ധീകരണങ്ങൾ, ഇൻറർനെറ്റ് മുതലായവ ഉപയോഗപ്പെടുത്താറുണ്ടോ?				
10	ലഭ്യമാകുന്ന സാങ്കേതിക വിജ്ഞാനം രേഖപ്പെടുത്തി വയ്ക്കാറുണ്ടോ?				

VI. നിർവ്വാഹക (MANAGERIAL) ഘടകങ്ങൾ:

ഉചിതമായ അഭിപ്രായം രേഖപ്പെടുത്തുക:

ക്രമ നമ്പർ	പ്രസ്താവന	എല്ലായ്പ്പോഴും	മിക്കപ്പോഴും	ചിലപ്പോൾ	ഒരിക്കലുമില്ല
1	വിൽ മുതൽ വിപണനം വരെ എല്ലാ കാർഷിക പ്രവർത്തനങ്ങളും മുൻകൂട്ടി തീരുമാനിക്കാറുണ്ട്				
2	യഥാസമയത്ത് ശരിയായ തീരുമാനങ്ങളെടുക്കുവാൻ കഴിയാറുണ്ട്				
3	ഓരോ വിളവിൻറെയും വരവുചെലവുകൾ കണക്കുകൾ നോക്കാറുണ്ട്				
4	കാർഷികപ്രവർത്തനങ്ങൾക്കാവശ്യമായ തൊഴിലാളികളെ മുൻകൂട്ടി സംഘടിപ്പിക്കാറുണ്ട്				
5	കൃഷിയിടത്തിലെ എല്ലാ പ്രവർത്തനങ്ങൾക്കും ഞാൻ നേരിട്ട് മേൽനോട്ടം വഹിക്കാറുണ്ട്				
6	വിളപരിപാലനം ആസൂത്രണം ചെയ്യുന്നതിനായി കാർഷിക കലണ്ടർ തയ്യാറാക്കാറുണ്ട്.				
7	കൃഷിയിടത്തിൽ എന്തെങ്കിലും പ്രശ്നങ്ങൾ ഉണ്ടായതായി കണ്ടാൽ ഉടൻടി പരിഹാരമാർഗ്ഗങ്ങൾ സ്വീകരിക്കാറുണ്ട്				
8	കൃഷിക്കാവശ്യമായ വിവരങ്ങൾ ശ്രദ്ധാപൂർവ്വം തെരഞ്ഞെടുത്തുപയോഗിക്കാറുണ്ട്				
9	വിപണനസാധ്യതകൾ മുൻകൂട്ടി കണ്ടുകൊണ്ട് പലതരത്തിലുള്ള വിപണന തന്ത്രങ്ങൾ ഉപയോഗിക്കാറുണ്ട്				
10	കാർഷിക തൊഴിൽ ബിസിനസ്സ് സംരംഭക അവസരങ്ങൾ വേണ്ട രീതിയിൽ ഉപയോഗിക്കാറുണ്ട്				

c. കൃഷിയിടത്തിലെ പ്രത്യേകതകൾ

a. വിളകളുടെ വിവരങ്ങൾ:

b. കന്നുകാലി സമ്പാദ്യം:

c. വരവ്-ചെലവ് അനുപാതം:

കൃഷിയിൽനിന്ന് കഴിഞ്ഞ വർഷം/സീസണിൽ ലഭിച്ച ശരാശരി മൊത്തവരുമാനം :

കഴിഞ്ഞ വർഷം/സീസണിലെ ആകെ കൃഷിച്ചെലവ് :

d. കൃഷി അധിഷ്ഠിത വരുമാന സ്രോതസ്സുകൾ /യൂണിറ്റുകൾ:

കന്നുകാലി / പൌൾട്രി ഫാം	അലങ്കാര മത്സ്യം/ മൃഗങ്ങൾ/ പക്ഷികൾ	തേനീ ചുക്വുഷി	മണ്ണിരകമ്പോസ്റ്റ് /കാർഷിക ഉപാധി നിർമ്മാണം	കൂൺ കൃഷി	നഴ്സറി/ പൂക്വുഷി	മൂല്യവർധിത ഉത്പന്ന നിർമ്മാണം /കാർഷിക വിപണന കേന്ദ്രം	മറ്റു ള്ളവ

e. കാലാവസ്ഥാവ്യതിയാനവുമായി നാട്ടറിവുകൾ പൊരുത്തപ്പെട്ട് പോകുവാനുള്ള

ക്രമ നമ്പർ	നാടൻ കൃഷിയറിവുകൾ	ഉപയോഗക്ഷമത

f. കൃഷിയിടത്തിലെ മറ്റ് പ്രത്യേകതകൾ:

D. കഴിഞ്ഞ പത്ത് വർഷമായി കാലാവസ്ഥയിലുണ്ടായ മാറ്റം നിങ്ങളുടെ കാഴ്ചപ്പാടിൽ

ക്രമ നമ്പർ	സൂചകങ്ങൾ	പ്രതികൂലമായ മാറ്റം	മാറ്റമില്ല	അനുകൂലമായ മാറ്റം
1	ഗുരുതരകാലാവസ്ഥാ പ്രശ്നങ്ങൾ - വരൾച്ച/ വെള്ളപ്പൊക്കം/ കാറ്റ്/ ഉരുൾപൊട്ടൽ			
2	മഴയുടെ അളവ്, ലഭ്യത, തീവ്രത, സമയക്രമം			
3	വേനൽക്കാല താപനില/ചൂട്			
4	മണ്ണൊലിപ്പ്/വെള്ളം നഷ്ടപ്പെടൽ			
5	വിളകളിലെ രോഗ കീടബാധ			
6	വിളകളുടെ ഉത്പാദനക്ഷമത			

കാലാവസ്ഥയിലുണ്ടാകുന്ന മാറ്റങ്ങൾക്കനുസരിച്ച് വിളകളിലോ, കൃഷിരീതികളിലോ എന്തെങ്കിലും മാറ്റങ്ങൾ വരുത്താറുണ്ടോ? ഉണ്ടെങ്കിൽ എന്തൊക്കെ?

E. താങ്കളുടെ അഭിപ്രായത്തിൽ കാലാവസ്ഥാവ്യതിയാനം മൂലം കർഷകർ നേരിടുന്ന പ്രശ്നങ്ങൾ എന്തൊക്കെയാണ്? അവ നേരിടുന്നതിനുള്ള പരിഹാരമാർഗ്ഗങ്ങൾ എന്തൊക്കെയാണ്?:

APPENDIX-V



Agromet Advisory Service bulletin 39/17, Friday dt.29-09-2017

(Issued jointly by IAAS Vellanikkara)

Dept. of Agricultural Meteorology, College of Horticulture, Vellanikkara

Email: kauagmet@yahoo.co.in, cohagmet@kau.in



THRISSUR

CURRENT SYNOPTIC SITUATION: An upper air cyclonic circulation lies over west central Bay of Bengal off South Odisha –North Andhra Pradesh coasts and extends upto 3.6km above sea level tilting southwestwards with height. Another upper air cyclonic circulation lies over North Kerala coast and neighbourhood between 4.5km and 7.6km above sea level.

Heavy rainfall warning: Heavy rainfall is most likely to occur at one or two places in Kerala till the morning of 29th September 2017.

NWP MODELS BASED DISTRICT LEVEL WEATHER FORECAST

ISSUED ON: 28.09.2017

VALID TILL 08:30 HRS IST OF THE NEXT 5 DAYS

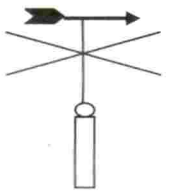
DISTRICT : THRISSUR

ENSEMBLE FCST

PARAMETERS	29.09.2017	30.09.2017	01.09.2017	02.09.2017	03.09.2017
Rainfall (mm)	12	7	7	16	16
Max Temperature (deg	30	31	31	31	31
Min Temperature (deg C)	24	24	24	24	24
Total cloud cover (octa)	7	6	6	7	7
Max Relative Humidity (%)	90	90	90	90	90
Min Relative Humidity (%)	75	75	75	75	75
Wind speed (kmph)	12	12	12	12	12
Wind direction (deg)	250	250	200	180	180

Agro Meteorological Advisories:

Crop	Stage of the crop / Pest/Disease	Advisories
Paddy (Jyothi, kanjana)	Sheath blight	There is a chance for Sheath blight disease during rainy season. The immediate symptom is that outer leaves of paddy become yellow coloured. Black lesions can be seen on the lower part just above the water level. As a prophylactic measure, Apply Pseudomonas or Trichoderma @ 20 gram per litre of water. To prevent this disease, apply Hexaconazole @ 2 ml per litre of water.
Coconut	Bud rot	As a prophylactic measure, hung three perforated packets of Mancozeb sachet (5gm) around spindle leaves.
Banana	Erwinia Rot	Proper drainage should be ensured. As a precaution, apply lime in the banana basin or bleaching powder in the irrigation channels. To improve the disease resistance, drench the basin with Pseudomonas @ 20g per litre of water. Affected plants can be protected by drenching the basin with 5 g bleaching powder or 3 g oxychloride or 2g copper hydroxide per one litre of water. Severely affected plants should be cut and removed to prevent the spread of disease.
Animal Husbandry		Mosquito control measures can be adopted. Cattle should not be allowed graze in water logged areas for avoiding diseases. Avoid water logging in cattle sheds also. If fever and respiratory distress are noticed consult a veterinary surgeon. (CAADECS, KVASU, Mannuthy)



കേരള കാർഷിക സർവ്വകലാശാല
കാർഷിക കാലാവസ്ഥാ ശാസ്ത്രപഠന വിഭാഗം, ഹോർട്ടികൾച്ചർ കോളേജ്,
വെള്ളാനിക്കര.

കാർഷിക നിർദ്ദേശക ബുള്ളറ്റിൻ

തുശ്ശൂർ

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കേരള കാർഷിക സർവ്വകലാശാല കാർഷിക കാലാവസ്ഥാ ശാസ്ത്ര പഠന വിഭാഗത്തിന്റെയും,
ഇന്ത്യൻ കാലാവസ്ഥാ വിഭാഗത്തിന്റെയും, കേരള കൃഷിവികാസത്തിന്റെയും സഹകരണത്തോടെ
തയ്യാറാക്കുന്നത്.

എ.എ.എസ് 39/17, വെള്ളിയാഴ്ച

തീയതി 29.09.2017

അടുത്ത 5 ദിവസത്തേക്കു കാലാവസ്ഥാ പ്രവചനം:

കാലാവസ്ഥാ ഘടകങ്ങൾ	29.09.2017	30.09.2017	01.09.2017	02.09.2017	03.09.2017
മഴ (മില്ലിമീറ്റർ)	12	7	7	16	16
ഉയർന്ന താപനില (°C)	30	31	31	31	31
കുറഞ്ഞ താപനില (°C)	24	24	24	24	24
മേഘവ്യാപ്തി (ഒക്ട)	7	6	6	7	7
കൂടിയ അന്തരീക്ഷ ആർദ്രത (%)	90	90	90	90	90
കുറഞ്ഞ അന്തരീക്ഷ ആർദ്രത (%)	75	75	75	75	75
കാറ്റിന്റെ വേഗത (കിലോമീറ്റർ/ മണിക്കൂർ)	12	12	12	12	12
കാറ്റിന്റെ ദിശ (ഡിഗ്രി)	250	250	200	180	180

തുശ്ശൂർ ജില്ലയിൽ ഈ ആഴ്ച മിതമായ തോതിൽ മഴയ്ക്ക് സാധ്യത.

കാർഷിക നിർദ്ദേശങ്ങൾ:

വിളകൾ	വളർച്ചാഘട്ടം/ രോഗ കീടങ്ങൾ	കാർഷിക നിർദ്ദേശങ്ങൾ
നെല്ല് (ജ്യോതി,കാഞ്ചന)	പോള രോഗം	മഴക്കാലത്ത് നെല്ലിൽ പോളരോഗം കാണാനിടയുണ്ട്. നെൽച്ചെടിയുടെ ഏറ്റവും പുറമെയുള്ള ഓലകൾ മഞ്ഞനിറമാകുന്നതാണ് പെട്ടെന്ന് കാണുന്ന ലക്ഷണം. കടഭാഗം നോക്കിയാൽ ജലനിരപ്പിനു മുകളിലായി ഇലപ്പോളകളിൽ കുറഞ്ഞ പാടുകൾ കാണാം. സ്യൂഡോമോണാസ് അല്ലെങ്കിൽ ട്രൈക്കോഡർമ 20 ഗ്രാം ഒരു ലിറ്റർ വെള്ളത്തിൽ കലക്കി തളിച്ചാൽ പോളരോഗം വരാതെ തടയാം. പോളരോഗം നിയന്ത്രിക്കുവാൻ ഹെക്സാകോണസോൾ 2 മില്ലി. ഒരു ലിറ്റർ വെള്ളത്തിൽ എന്ന തോതിൽ തളിക്കാം.
തെങ്ങ്	കുമ്പുചീയൽ	തെങ്ങിലെ കുമ്പുചീയൽ രോഗത്തിനു മുൻകരുതലായി സൂഷിരങ്ങൾ ഇട്ട മാങ്കോസെബ് സാഷ് (5ഗ്രാം) മൂന്നുപായ്ക്കറ്റ് വീതം ഒരോ തെങ്ങിന്റെ കുമ്പിനു ചുറ്റും വയ്ക്കുക.
വാഴ	എർവിനിയ റോട്ട്	നീർവാർച്ച സൗകര്യം മെച്ചപ്പെടുത്തുക. വാഴത്തടത്തിൽ കുമ്മായം ഇടുന്നതും, നീർച്ചാലുകളിൽ ബ്ലീച്ചിങ്ങ് പൗഡർ ഇടുന്നതും നല്ലതാണ്. 20 ഗ്രാം സ്യൂഡോമോണാസ് ഫ്ലൂറസൻസ് ഒരു ലിറ്റർ വെള്ളത്തിൽ എന്ന തോതിൽ തയ്യാറാക്കിയ ലായനി മണ്ണ് കുതിരത്തക്ക വണ്ണം, വാഴയ്ക്ക് ചുറ്റും ഒഴിക്കുന്നത് രോഗപ്രതിരോധശേഷി വർദ്ധിപ്പിക്കും. രോഗം ബാധിച്ചാൽ 5 ഗ്രാം ബ്ലീച്ചിങ്ങ് പൗഡർ അല്ലെങ്കിൽ 3 ഗ്രാം ഓക്സിക്ലോറൈഡ് അല്ലെങ്കിൽ 2 ഗ്രാം കോപ്പർ ഹൈഡ്രോക്സൈഡ് ഒരു ലിറ്റർ വെള്ളത്തിൽ എന്ന തോതിൽ ചേർത്ത് തയ്യാറാക്കിയ ലായനി മണ്ണ് കുതിരത്തക്ക വണ്ണം, വാഴയ്ക്ക് ചുറ്റും ഒഴിക്കണം. രോഗം രൂക്ഷമായ വാഴകൾ വെട്ടിമാറ്റി നശിപ്പിക്കുകയും, ആ കുഴിയിൽ കുമ്മായം അല്ലെങ്കിൽ ബ്ലീച്ചിങ്ങ് പൗഡർ ഇടുകയും ചെയ്യുക.
മൃഗസംരക്ഷണം		കൊതുകു നിവാരണ മാർഗ്ഗങ്ങൾ സ്വീകരിക്കുക. കുളമ്പ് ചീയൽ, കുളമ്പിനാകുന്ന ക്ഷതം എന്നിവ ഒഴിവാക്കാനായി വെള്ളക്കെട്ടുകളിൽ കന്നുകാലികളെ മേയ്ക്കാൻ വിടാതിരിക്കുക. തൊഴുത്തിൽ വെള്ളം കെട്ടി നിൽക്കുന്നത് ഒഴിവാക്കുക. പനിയുടെയും, ശ്വാസത്തടസത്തിന്റെയും ലക്ഷണങ്ങൾ കാൽ ഉടൻ ഡോക്ടറുടെ സഹായം തേടുക. (CAAECS, KVASU, Mannuthy)

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