

**AN ANALYSIS OF FOOD SECURITY AMONG RURAL  
HOUSEHOLDS IN KERALA**

*Thesis submitted to the University of the Calicut  
for the award of the degree of*

**Doctor of Philosophy in Economics**

**By**

**SANOOP M S**

*Under the supervision of*

**Prof (Dr.) K.P.MANI**

**Professor (Retd.)**

**Department of Economics**

**University of Calicut**

**Department of Economics**

**University of Calicut**

**Dr.John Matthai Centre**

**Aranattukara, Thrissur**

**March 2018**

## **Certificate**

This is to certify that this thesis entitled, “**AN ANALYSIS OF FOOD SECURITY AMONG RURAL HOUSEHOLDS IN KERALA**” being submitted by SANOOP M S for the award of the degree of **Doctor of Philosophy**, to the Department of Economics, University of Calicut, Dr. John Matthai Centre, Aranattukara, is a record of bonafide research work carried out by him under my guidance and supervision. The contents of this thesis, in full or in part, have not been submitted and will not be submitted to any other institute or University for the award of any degree or diploma. Plagiarism is checked and found within the permitted limits.

Date:

Place: Thrissur

**Dr. K.P. MANI**

(Supervising Teacher)

Professor (Retd.)

Department of Economics

Dr. John Matthai Centre

University of Calicut

**Dr. Zabeena Hameed P**

(Co-Guide)

Assistant Professor

Department of Economics

Dr. John Matthai Centre

University of Calicut

## **Declaration**

I, SANOOP M S, do hereby affirm that this written account titled **“AN ANALYSIS OF FOOD SECURITY AMONG RURAL HOUSEHOLDS IN KERALA”** is a bonafide record of research done by me under the guidance of Dr. K P Mani, professor in Economics, University of Calicut. I also declare that this thesis has not been submitted by me earlier for the award of any degree, diploma, fellowship or any other similar title.

Date:

**SANOOP M S**

Place: Thrissur



***Dedicated to my family***

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## CONTENTS

<b>CHAPTER NO.</b>	<b>TITLE</b>	<b>PAGE NO.</b>
I	DESIGN OF THE STUDY	1-50
II	FOOD SECURITY IN INDIA	51-101
III	SUPPLY AND DEMAND SIDE OF FOODGRAINS IN KERALA	102-131
IV	AN APPRAISAL OF RURAL FOOD BASKET IN KERALA	132-185
V	IMPACT OF PUBLIC INTERVENTION ON KERALA'S FOOD SECURITY	186-221
VI	SUMMARY CONCLUSION AND POLICY IMPLICATIONS	222-238
	SELECTED BIBLIOGRAPHY	
	APPENDIX	

## List of Tables

Table No.	Title	Page No.
2.1	Hunger around the world	53
2.2	Growth rates of India – pre independence	56
2.3	Growth rates of production and yield of agricultural crops at the time of independence	57
2.4	Land by Use Classifications in India	59
2.5	Per capita net availability of food grains in India	62
2.6	Area, Production and Yield of Total Food Grains	65
2.7	Area, Production and Yield of Various Food Grains	67
2.8	Per capita net availability of food grains in India	70
2.9	All India Production of major food grain crops	72
2.10	State-wise production of food grains in India	74-75
2.11	State-wise production of Rice in India	77-78
2.12	State-wise production of Wheat in India	80-81
2.13	State-wise production of Coarse Cereals in India	83-84
2.14	State-wise production of Pulses in India	86-87
2.15	Achievement of MDMS	91
2.16	Net Availability, Procurement and Public Distribution of Food grains in India	92
2.17	Supply Management in Public Distribution System	94
3.1	Share of sectors in GSDP in Kerala	104
3.2	Trends in Agricultural Income in Kerala	106
3.3	Land Utilization Pattern in Kerala	108
3.4	State level estimates of Gross cropped area, Net cropped area and cropping Intensity	110
3.5	Area under important food crops in Kerala	111
3.6	Production of important crops in Kerala	113
3.7	Changes in Area and Production of important crops in Kerala from 1960-61 & 2015-16	114-115
3.8	Area under food grains in Kerala	116
3.9	Production of food grains in Kerala	117
3.10	Area under rice in Kerala	119
3.11	District wise paddy area and its percentage to total paddy cropped area in Kerala (2014-15)	121
3.12	Production of Rice in Kerala	122



3.13	Estimated Rice Requirement, Internal Availability, and Supply Gap in Kerala	124
3.14	Internal production, dependence on other states and total requirement of food grains in Kerala	130
4.1	A brief profile of sample districts	133-134
4.2	A brief profile of sample areas	143
4.3	Distribution of the respondents based on economic category	144
4.4	Distribution of the respondents based on type of family	144
4.5	Period of stay at home	145
4.6	Religion wise classification	145
4.7	Social group wise classification	146
4.8	Occupational status of the head of the household	146
4.9	Source of Income	147-148
4.10	Type of Structure of the house	148
4.11	Gender wise classification of the members in the selected sample households	148
4.12	Age wise classification of the members in the selected sample households	149
4.13	Marital Status of the members in the selected sample households	150
4.14	Education Status of the members in the selected sample households	150
4.15	Classification of households according to Family Income	151
4.16	Classification according to the pension received	152
4.17	Land owned in Cents	152
4.18	Households utilizing Land for Agricultural Purpose	153
4.19	Utilization of Land	153
4.20	Obtain Essential Food Items Easily	154
4.21	Have Mortgage in Land	154
4.22	Have Lease in Land	155
4.23	Acquiring Enough Quantity of Food	155
4.24	Able to deal with Sufficient Food for all the members in the family from family income	156
4.25	Source of purchase of food items	156
4.26	Availability of food items	157
4.27	Average quantity of each food items purchased and consumed per month and also percentage quantity consumed	158

4.28	Number of respondents purchasing each food items from different sources	159
4.29	Control on Household Income and Expenditure	160
4.30	Able to give Food to family Members according to age and condition	160
4.31	Have to make obtainable all food items throughout the year	161
4.32	Aware about the enough income is essential for household food security	162
4.33	Farming is essential for household food security	162
4.34	Food articles are easily available	163
4.35	Money spend in one month for different items	164
4.36	Maintains the Stocks of rice or other staple foods	164
4.37	Activities sustaining (main Activity)	165
4.38	Activities Sustaining (Second Activity)	165-166
4.39	Type of Breakfast	166
4.40	Type of Lunch	166
4.41	Type of Dinner	167
4.42	Transport Facility Available for Sale and Purchase of Food Items	167
4.43	There is Market for Sale and Purchase	168
4.44	Family is Able to afford all Three Meals a day	168
4.45	Proportion of Income Spent for buying food	169
4.46	Rise in Price of Food Items affected families' intake of food grain	169-170
4.47	Reason for worry to Arrange Money to purchase family's next meal	170
4.48	Family gets 100 Days employment under MGNREG Act 2005	171
4.49	Feel that Scarcity is a Chronic Problem	171
4.50	Aware About Market Rates	172
4.51	Experienced any Food Shortage over the past 12 months	172
4.52	Depend mostly to get the food you needed	173
4.53	Determining factor of food articles	175-176
4.54	Constraints faced in household food security	177
4.55	Type of Food Assistance getting from Angnawadi	178
4.56	Aware of the government programmes to enhance the food security of the rural poor	178

4.57	Awareness about NFSB for enhancing the food security of the people	179
4.58	Preference of different public intervention based on easily availability of food items	179
4.59	Preference of different public intervention based on affordability in price of food items	180
4.60	Preference of different public intervention based on quick accessibility	180
4.61	Preference of different public intervention based on quality of food items	181
4.62	Suggestions in household food security	181
4.63	Results of ANOVA of purchased items	182-183
4.64	Results of scaling	184
5.1	ICDS Beneficiaries in Kerala	189
5.2	Mid-Day Meal Programme- Supply of Food grains	191
5.3	Employment Scenario in Kerala under MGNREGS	193
5.4	Provisions in the NFSA	195-196
5.5	Public Distribution System in Kerala- A Profile	201
5.6	Category wise ration cards in Kerala	202-203
5.7	Allotment and off take of rice and wheat in Kerala	203
5.8	Distribution of rice and wheat through PDS in Kerala	204
5.9	District wise Food Grain (Wheat) Distribution under PDS in BPL households	205
5.10	District wise Food Grain (Rice) Distribution under PDS in BPL households	206
5.11	District wise Food Grain (Wheat) Distribution under PDS in APL households	207
5.12	District wise Food Grain (Rice) Distribution under PDS in APL households	208
5.13	District wise Food Grain (Rice) Distribution under PDS in AAY Scheme	209-210
5.14	District wise Food Grain (Rice) Distribution under PDS in ANP Scheme	211
5.15	Total Number of Cards and the breakup of Priority, Non Priority, State Priority and AAY Cards on in Kerala (District Wise) on 09.03.2017	213
5.16	Total Number of Cards and the breakup of Priority, Non Priority, State Priority and AAY Cards on in Kerala on 09.03.2017	214
5.17	Details of Card Holders and Entitlements of Food grains (2016)	215

5.18	Retail Price of Commodities issued through Ration	215
5.19	Time of purchase of each food items from PDS	216
5.20	Average quantity of each food items purchased from PDS	217
5.21	Have Fair Price Shops in the areas	218
5.22	Distance between Home and ration shop	218
5.23	Knowledge about the availability and supply of ration items in the fair price shop	219
5.24	Aware of Ration entitlement per month	219
5.25	Received Monthly Ration items regularly from fair price shop	220
5.26	Get Quality Ration Items from the ration shop	220
5.27	Allotted Quota Ration Items is Adequate	221

## List of figures

<b>Figure No.</b>	<b>Title</b>	<b>Page No.</b>
1.1	Sample design	49
3.1	Estimated net availability of rice in Kerala	126
3.2	Estimated deficit of rice in Kerala	127
3.3	Rice requirement, internal production and PDS contribution	128
3.4	Dependence of other states for rice requirements	129

**CHAPTER – 1**  
**DESIGN OF THE STUDY**

## **1.1 Introduction**

Development of a nation is possible only when all its citizens are well fed. The word development loses its meaning when food, one of the basic necessities of life, is not met with for everyone. Reports show that thousands of people perish out of hunger, malnutrition and stunted growth around the globe annually. The poorer sections of the society especially the rural poor, backward classes, landless labourers are the worst hit. Most importantly, women and children among them who go to bed with an empty stomach and a lot of people still starving for a meal, a day, is a harsh reality. In the words of Dr. Norman Borlaug, “You can’t build a peaceful world on empty stomachs and human misery.” Thus, the concept of food security gains its importance worldwide with great relevance in today’s scenario.

Today, food security is a major problem all over the world. The concept of food security has got predominance since 1970’s. The term food security envisages need to ensure food security for all in the plane of sustainable development. Now a day’s food security is a common problem because of mainly two factors. Firstly, there is lack of availability of food (Physical access to food) and secondly, lack of purchasing power of the people (Economic access to food). United Nation’s Committee on World Food Security defines the term food security as “the condition in which all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” To put it in simple terms, food security in a country means availability, accessibility and affordability of food for all its citizens, at all times.

The Food and Agriculture Organisation (FAO) stated four pillars of food security as availability, accessibility, affordability and stability. Factors such as growing population, climate change, rising food prices, land-use pattern etc. have a significant impact on food security. The availability component in food security deals with the production of food items and the accessibility of food deals with the consumption side. Affordability deals with the purchasing power of the individuals. Access to food is determined by entitlements (Jha and Srinivasan, 2004). Mainly there are four types of entitlements, namely; production based entitlements, exchange based

entitlements, labour based entitlements, and transfer based entitlements. The Right to Food, which UN recognized in the Declaration of Human Rights in 1948, ensures all human beings free from hunger, food insecurity and malnutrition. The concept of food insecurity and its impact is also as important as food security. Famine, hunger and stunted growth are the outcomes of global food insecurity. Of which, women and children are most adversely affected.

Food insecurity has two dimensions, namely short term or transitory and long term or chronic. In the short term, at the aggregate level, instability in cereal production, stocks, food prices, income export earnings, and food imports in the short run give rise to instability in food consumption. Internally, food prices depend on cereal production and food imports. But the regions with the chronic food insecurity are primarily an internal problem. Instability and shortage in cereal production due to non conducive agro climatic conditions can be attributed to the chronic food insecurity (Rao et al, 1987)

Food insecurity is increasing in the world where 925 million people are undernourished. Out of them, about 900 million people are living in developing countries (FAO, 2010). More than 70% of these people live in rural areas and depend, directly or indirectly on agriculture for their living. Usually, there are limited number of markets and less diversity and availability of food items in rural areas that affect food security of rural households.

At the macro level food grains availability in India is calculated as 87.5 percent of gross production (the rest is estimated as requirement for seeds, farm animal feed, and waste) plus net imports minus changes in government stocks. Assuming no net change in private stocks, this can be taken as a good proxy for overall food grains consumption in the country. During the 50 years before Independence food grains availability declined from 545 g to 407 g per head per day. Considering five-year averages India saw a rise in the food grains availability per head from 416 g during 1950–55 to 485 g by 1989–91 (Patnaik, 2004). However, since then there has been a slide to a low of 445 g per head per day by 2006, a level not seen since the drought years of the 1970s.



India is the second largest country in the world in the matter of population. The population of India was provisionally estimated by the census 2011, at 121.01 crore comprising 62.37 crore males and 58.65 crore females. It is the most important considerable plus point of India, because it involves large human capital. Recently most of Indian people are struggling with the bread and butter due to the continuously increasing prices of food grains, vegetables, pulses and other cereals. Around 70% of the Indian population lives in rural areas, often working in the informal sector. Though food availability may not be a problem of rural households, food utilization could be a problem. Rural household should be enlightened on the various food items and the need for a balanced diet.

At the household level, food security refers to an issue of availability. The household must be able to consume the required quantity of food grains. Food security has two sides, demand side and supply side. Demand side depends on the growth of population, the age composition of household, and the calorie intake in every day. Food supply deals with the quantity of consumption. There are mainly four channels of food supply in rural areas, i.e.; own production, open market, fair price shops, and wages in kind. Farmers access to food grains through own production. This is known as direct access to food. Household depends on other three channels of food supply and access to land but producing only nonfood crops is termed as indirect access of food. Poor people do not have adequate means or entitlements to secure their access to food, even if food is available in local markets (Sen 1981) and the major factor responsible for food insecurity is the lack of purchasing power or exchange entitlements.

The food deficit countries normally try to overcome the food shortage through food aid. It has been seen that food aid is an important means to improve food security by providing the means to protect the consumption and nutritional status of the poor (Mellor, 1985). Vyas (2003) pointed out that food security is too complex an issue to be left only to the state to resolve. The markets and the civil society institutions also have a role to play towards achieving these objectives. It is only when

the civil society institutions, markets and the state policies converge that we will come closer to the ideal of food security for all.

Against the national average of over three-quarters of land under food grains, in Kerala only about one-fifth of the land is under food grains. The dominance of non-food crops leads to the decline in the area of traditional crops and the share of agricultural sector to the Gross State Domestic Product (GSDP) has increased throughout the years since the formation of the state. The share of agriculture and allied sectors in the total GSDP of Kerala has also declined from 14.38 percent in 2011-12 to 10.38 percent in 2015-16. The state produces only 15 percent of its required quantity of food grains by itself and the remaining we depend on other states. Kerala continues to be a consumer state and the food deficit state in India due to the poor performance in the primary sector.

## **1.2 Review of Literature**

This section is devoted to the review of literature relevant to the topic of the study. Some of the similar studies which have direct relevance to the problem under investigation have been traced out. Thus; literature review aims to expose the critical points of current and collected knowledge on the topic under study. Food security has been a persistent problem with all the economic activity. Several studies in this regard have been conducted from time to time and a number of high level committees have made innumerable recommendations and policies for reforms in the availability, accessibility and affordability aspects of food security system. To have glow on the existing manner of this nastiness, the findings of some studies have been comprehended under the following sub sections

- I. Perspective of food security situation
- II. Production and Distributional phase
- III. Demand and Supply side aspect
- IV. Policies and programmes facet

Here the study proposes to conduct a review of major studies in this area

### **1.2.1. Perspective of food security situation**

Suryanarayana M H and Silva Dimitri (2008) illuminate the poverty and hunger situation in South Asia and in small islands in the Pacific. For the Asia and Pacific Region as a whole, despite efforts to accelerate economic growth and reduce poverty, only limited progress has been achieved in moving towards the target of halving the number of people who live in hunger. To achieve the goal of reducing the proportion of people who suffer from hunger to halve between 1990 and 2015, for the Asia-Pacific Region, the first thing to achieve is grain security, defined as availability of socio-culturally acceptable grain in the system, the grain is of adequate nutritional value and people have economic, physical and social access to such grain at all times, for a healthy life. Grain security is also one of the major factors that may affect the social stability and economic development of the region and the concomitant social disturbances. The study also provides a regional profile of food insecurity in different dimensions which could go a long way in decentralized formulation and implementation of the PDS.

The positive overall trend in increased food security relies on the capacity of Asian economies to address several key policy issues, including sustained economic growth, population pressure, structural changes in domestic economies, shifts in international comparative advantage, technological change, development in the domestic and international food markets, and environmental sustainability (Peng Yang Chao) and there is a need for effective targeted efforts for ensuring food security at the regional as well as household levels (Suryanarayana M H (1997))

Tweeten Luther (1999) examines the food security synthesis for poor in developing countries. The challenge of food security for our time is for economists to work with others regarding socio institutional changes essential for proven policies and practices to supply adequate diets. Poverty is best alleviated through broad-based, sustainable economic development. The most effective and efficient means to economic development is to follow the standard model which assures an economic pie to divide among people and among functions, such as human resource development, infrastructure, family planning, food safety net, and

environmental protection. The central puzzle-why food-insecure countries abstain from the standard model when it can bring food security-is explained by political failure. Terminating even the worst policies creates losers. Political failure is inseparable from broader institutional failure. Poorly structured, inadequate institutions often trace to cultural factors such as tolerance of the public for unrepresentative, corrupt, incompetent government. Thus, the challenge of food security for our time is socio institutional change. Understanding development processes and how to bring about constructive change is a multidisciplinary task.

There have been changes in environment too over the years and agricultural growth and environment have become part of the debate on sustainable agriculture. The task of ensuring food security to all will become more difficult if the balance is tilted in favor of one of these three important institutions - state, market and civil society and only one of them is made responsible for ensuring food security. Each of these institutions not only has a role to play, but have to complement each other to ensure food security in true sense of the term. Technical changes and sustainable agriculture touched on several matters of significance in the future of Asian agriculture. It was put forth that science in its diverse forms has much to offer by way of solutions to finding escape routes from poverty and to answering questions of resource sustenance and hence, the need for policy-makers to come to grips with these topics cannot be over-stated. Continuing with effective implementation of land reforms in many parts of Asia, including India, has long been agreed as an absolutely vital step in improving income distribution and in alleviating poverty but progress has been painfully slow. For agricultural and rural development, policy planning has to be according to different agro-eco systems of each area (Singh Surjith (2002)).

The famines and the prominent role which international aid and programmes have come to play in meeting famines is a sign of deterioration in the national food security systems rather than any improvement. It looks at the problems in providing food security to large population exposed to the risk of famines is a notable addition to the analytical literature in this field. Sen's proposition that famines are an outcome of a breakdown in entitlements and the development economist's

perception that agriculture gets low priority and resources on the plans of the developing countries. It explains the aspects of production, supplies, distribution, poverty and policy environment at the national and international levels and also tracing the weaknesses of the food security systems to the absence of broad-based and participatory agricultural growth quite persuasive. Food and agriculture were accorded a relatively passive role in economic development thinking and strategy articulation. The indicator is designed to classify countries into three groups, fair, poor and very poor. It contains explanations concerning the construction of the indicator and the country-wise data on the variables and status categories (Rao V M (1992)).

Food security and economic growth interact in a mutually reinforcing process over the course of development. It is only in modern times that entire societies have achieved food security (Timmer Peter C (2004)).

The problem of food insecurity in India is not of general systemic failure that arises due to supply shortage. It is in fact more a problem where certain sector suffers from a shortage of food in a general climate of increasing production. The main cause of food insecurity in India today is a lowering of purchasing power among the poor and vulnerable populations in rural and urban centers of the country, coupled with the inefficient functioning of the Targeted Public Distribution System (TPDS) and a slowdown of policy initiatives to step up support led security measures (Chakravarty Sujoy and Dand A Sejal (2005)).

In the beginning of 21<sup>st</sup> century, Indian agriculture faced major challenges. The country has an excess of food grains in public stock and yet every fourth Indian does not even get a minimum calorie intake over the years, India is witnessing a decline in production and productivity of coarse cereal grains. In India, where a major landmass of 92.3 ha; of cultivable area, constitutes rain fed regions, that dry land farming of food crops especially coarse cereals must be encouraged. Whatever be the strategy to ensure food security, it should be safe, socially acceptable, and eco-friendly through a sustainable food system that maximizes community self-reliance and social justice (Deepa B Hiremath and R L Shiyani (2012)).

Food grain production is at the moment fit, but we are facing double digit inflation in the case of food items. A paradox of endemic mass hunger co-exists with mounting food grain stock. India ranks an abysmal 67<sup>th</sup> in the Global Hunger Index 2010 among the Brazil, Russia, India and China (BRIC) countries. The position of Odisha is worse. To meet this challenge, recommendations made by the National Commission on Farmers (NCF) need urgent and concurrent attention. To meet the future needs of providing food security, greater attention needs to be devoted to the agricultural sector through larger investment in rural infrastructure including Research and Development of new technologies and by checking the diversion and plugging the leakages of food grains suggested through public distribution system (Karthik Prasad Jena (2012)).

The recent trend of rising food prices reminds that considerable sections of the urban population may face serious food insecurity even while the urban economy grows rapidly. A large segment of the urban working population is mostly without productive assets and relies primarily on wage or marginal self employment to survive. A large segment of the urban population faces food insecurity in terms of access to food. The food security situation may have worsened rather than improved for a sizeable segment of the urban population between 1998-2000 and 2004-06. The urban inequality has worsened in the period since 1991, the implications for the food security status of the urban poor. Expansion of productive and remunerative employment needs to be enabled through special assistance to the numerous small and tiny enterprises in the urban economy from credit to marketing support to infrastructure provision, urgent action needed to improve access to safe drinking water and toilets, urban PDS, promotion of urban and semi urban agriculture, especially horticulture and the interventions in flagship programmes such as the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) (Athreya Venkatesh (2010)).

The area under paddy cultivation increased substantially during the first fifteen years after the states formation. However, a steady decline in the area under rice cultivation from 1980s onwards. Today, rice occupies the third position among Kerala's agricultural Crops with respect to area under cultivation and it is far

behind coconut and rubber. A variety of issues impinge on paddy cultivation in Kerala. The main issues are seasonal shortage in labour supply, low level of profitability, competition from other crops and the conversion of paddy fields into residential and commercial plots. To revive the paddy cultivation, the government of Kerala introduced a three-pronged strategy for agriculture. The strategy aimed to provide urgent relief to farmers in debt, to stabilize agricultural prices and to raise agricultural productivity and income. Government announced the minimum support price at which the farmers are able to sell the crop. Kerala State Civil Supplies Corporation Limited (popularly known as Supplyco) has procuring paddy from farmers of Kerala, mainly in the paddy producing regions. Based on the receipt of paddy issued by the agents, Supplyco transfers money to the farmer's bank account. Kerala has built a strong set of democratic institutions at the local level and they have been a pillar of support to paddy farmers in the state; like Padasekhara Samitis, Thozhil Senas etc. to revive the paddy cultivation in the state (Jayan Jose Thomas (2010)).

The agricultural transformation in the regional economy of Kerala has been mainly driven by peasant rationality. The process of agricultural development in Kerala which was characterized by a paradigm shift towards commercial/perennial cash crops, mainly at the expense of food crops, especially, paddy. The choice of crops and agricultural land use decisions has been dictated by an increasing responsiveness to market forces. The cropping pattern underwent dramatic changes since 1961 through the 1980s and thereafter with the tremendous deterioration of food crop production. The agricultural transformation in the state has happened since late- 1970s and continued through the 1980s, up to the early 1990s, until the enunciation of the economic reforms in 1991. All the districts in the state had experienced tremendous deterioration in the area under food crops, barring Alappuzha, Palakkad, Malappuram and Thrissur. In the case of two dominant commercial crops (Coconut and Rubber), constitute together almost half of the total cropped area in the state, with the highest reported in Kozhikode, followed by Kottayam, Pathanamthitta etc. One of the critical aspects of the agrarian transition in

Kerala has been the emergence and domination of rubber as a monoculture system across districts (Viswanathan P K (2014)).

Farmers' wholehearted support and their economic wellbeing are vital for creating a sustainable food security system in the country. The Right to Food law could be implemented only with the help of farmers (Swaminathan M S (2010)). Agricultural development policies are commonly aimed at satisfying broad and conflicting objectives, defined in terms of efficient economic growth(through higher yields and higher-value activities), income distribution(including food security), and conservation of the natural resource base(through sustainable land use). To attain these objectives, economic incentives need to be identified that influence farmers decisions on land use and allocation of other resources (Keulen Van Herman et.al; (1998)).

The main policy measures for improving the nutritional status of cultivators include improved agricultural technologies, plans and programmes for increasing income of the poor farmers. Dairy enterprises should be given more priority in diversifying agriculture and diets and raising both income and nutritional status of the farmers. The increased diversion of land from food to non food crops; implementation of minimum support price policy for food grain crops and assured procurement combined with low cost of inputs has forced the farmers to follow fixed cropping system regularly (M.N. Waghmare and S.N. Tilekar (2012)).

An analysis of the households that have access to the PDS, what they purchase, and what are their rupee savings due to their access to the PDS. Its impact on poverty levels (as is conventionally defined) due to the existence of the PDS. Almost half the rural population and a quarter of the urban population report consuming fewer calories than they require as per the widely believed norms. Calorie deficiency appears to be highly dependent on the type of commodities being consumed - for instance wheat eaters appear to be less calorie deficient than rice eaters. The PDS is barely touching the tip of the iceberg where helping the worse-off sections are concerned. Ideally, poverty incidence by the conventional measure (HCR)



and calorie deficiency should not be very different from each other. In the urban sector, its reverse holds true. The impact of PDS on the incidence of calorie deficiency and poverty does not appear to be significant. Finally, it is also important to note that the PDS is not strong enough and the only instrument to ensure the food security of the poor, because it serves the purpose only to those who have purchasing power and are ration card holders (Dubey Amaresh & Srivastav Nirankar).

The close linkages existing between food security and Public Distribution system (PDS), socio-economic development, rural health, human rights and improving human development indicators in the developing country like India. Review status of public distribution system and its relationship with the problem of food security and poverty incidence among the states of India. Poverty indices for all the states in India are calculated. Then it appears that the PDS is widely accessible to the households in the region. The PDS plays a relatively more important role in food security of the households rather than poverty reduction. Thus the current system is beset with significant level of adulteration, pilferage & Corruption and in order to remove pilferage, adulteration, & Corruption, there seem to be some improvements in the functioning of PDS. Therefore, successful implementation of PDS is a big challenge in order to gain food security in India (Ghumaan Kaur Gurdeep and Dhiman Kumar Pawan (2013)).

Swaminathan M S (2010) focused on the alleviation of hunger and safeguarding farmers' income through four ways. The goal of food for all can be achieved only through sustained efforts in producing, saving and sharing food grains. Firstly, distribute the grains for which there is no safe storage facility. Food losses due to poor storage should be measured both in quantitative and qualitative terms. Subject to such screening, food grains fit for human consumption are best distributed free among the most deprived sections throughout the country. To begin with, about 5 million tons of wheat and rice could be allotted for this purpose from the stocks for which good storage conditions are not available. Secondly, Procurement of kharif crops. The MSP announced for rice and pulses is reasonably attractive and consequently, the production of pulses, rice, jowar, bajra, maize and oilseeds is likely

to be good. Over 20 million tons of rice will have to be procured during the next three months. Hence, no further time should be lost in making arrangements for the safe storage of the purchased grains. Thirdly, safe storage. The storage can start in every village in the form of grain banks and rural godowns and extend to strategic locations (hunger hotspots) throughout the country. It is time we invested in a national grid of ultra-modern storage structures. Lastly, Sow extensively during the rabi season. The rabi season is around the corner and it will be prudent to review the arrangements for the supply of the needed inputs like credit, insurance, seed, fertilizer and extension. Special efforts will have to be made to mount compensatory production programmes in areas affected by unfavorable weather during kharif. Similarly, the Save Grain campaign which was launched when we were food deficit was abandoned at a time when we needed it the most. It is to be hoped that the prevailing widespread interest in saving and sharing grains will lead to an effective “distribute, procure, store and sow” movement.

There are five new areas of transitional demand. The first relates to the withdrawal of the state from its role of supporting the peasantry and petty producers. The second element that comes to the fore relates to the struggle against such primitive accumulation of capital. Thirdly, in the absence of land augmenting investment and land augmenting technological progress, the agricultural output produced by the tropical land mass in the aggregate is not going to increase. Fourthly, even when there is no question of corporate capitalist encroachment, the peasantry may decide on its own to make a shift in land use. Lastly, in the period of neo liberalism, because of the absolute impoverishment that comes to large segments of the people, because the process of primitive accumulation of capital unleashed against peasants and petty producers is unaccompanied by any increase in decent employment, governments occasionally feel compelled to announce schemes of succor for people (Prabhat Patnaik (2014)).

### **1.2.2. Production and distributional phase**

Chang Cheng-Ching (2013) edifies the food prices and the food insecurity problems in East Asia. The sharp increase in global food prices has

triggered the awareness of food insecurity problems and their impacts on the low-income, food-deficient countries, like East Asia. The food security in East Asia is largely contributed by domestic production. Despite of a doubled import of foods over the last decade to meet its ever-growing population, Asia remains the least dependent among all regions on food imports. However, the raised energy costs and grain prices due to increasing grain demand for biofuel purposes appeared to aggravate the undernourishment of poor households in the region.

Food security is the ability of a household to get access to enough food for all its members, either by producing it or by earning adequate to purchase in the food deficit regions of the Hindukush Himalayan ranges. The shift has been away from aid for subsidizing subsistence agriculture to aid for exploitation of the niche that these hills offer. Thus instead of concentrating on staple foods, farmers are encouraged to grow high value crops which will contribute to their incomes and thus their food purchasing power. The fault lies in the way traditional systems have broken down, and governments and NGOs have focused on supply without concentrating demand or the special features of the mountains regions. The initial problem of food shortage was a direct result of concentration on food grain production. Between 1950 and 1990 there was a doubling of the population in this region. An area that had already reached its peak production capacity now had to carry twice the burden of population. Per capita availability of resources declined despite the extension of cropping activities in marginal lands. There were no dramatic increases in productivity and thus food availability also declined. Farmers have been unable to secure for their households enough food simply by growing food-grains, which are not suited for the mountains in any case. Thus instead of food-grains, these farmers should be encouraged to grow high value cash crops which will increase income that will entitle them to enough food for the household. A new form of food insecurity now threatens the lives of the farmers of this region - the threat of depletion of key resources like water, fodder, and soil. Increasing entitlements (incomes) might have brought prosperity, but the steam is running out of this strategy. Entitlements are secure only

as long as endowments (key resources) have it in them to carry on producing at the current rate (Nagpal Shantanu (1999)).

National Academy of Agricultural Sciences (NAAS) (2003) acclaims the elucidations for the paradoxical problem of surplus food stocks. There is also the related problem of substantial quantity of food being wasted. This has happened because of inadequate attention in the past to its storage, preservation, processing, and proper distribution. India has fortunately through concerted efforts of scientists and farmers surmounted the state of food deficit and come to a stage of food surplus. In fact, it is now faced with the paradox of a huge buffer stock of food grains, while also housing the largest population of undernourished in the world. NAAS recommends the solutions for the paradoxical situation. A universal and user-sensitive Public Distribution System, Food Guarantee Scheme, Community Food Banks and various other food entitlement projects need to be implemented in an integrated manner so that the goal of hunger-free India can be achieved. Nutrition status will, however continue to fall, unless the purchasing power of the poor is increased. Hence, livelihoods for all should be the bottom line of all national development and import and export policies.

Vijay Kumbhar explains the problem of hunger as result of poor implementation of policy measures. India raises the twin problems of uncertain food production and unequal food distribution. The impact of unequal food distribution can have adverse effects on the rural and urban population living below poverty line. Food insecurity is not only an economic problem but also a problem of non-humanity approach in India. The availability of the food grains is enough to satisfy their needs. According to the statistical data published by the 'Food Corporation of India' and the government of India food grain availability is 229 million tons in 2008-09 which is 230 million tons in previous year. It is happening because food grain traders are doing speculation practices and selling them in high prices than fair prices. We may say that, food insecurity is not only natural but also manmade. Most of the Indian people are struggling with the bread and butter due to the continuously increasing prices of food grains. Although, the food security problem in India is not severe if we success

in the proper distribution policy. This problem becomes serious due to the unfair trade practices by private traders doing in drought situation. The problem of hunger is due to poor economic accessibility.

Since independence, India faced two challenges: achieving food security and alleviate poverty. At that time India mainly depended on agricultural imports. From a net importer of food in 1950's, India has transformed in the production of food grains during the last few decades. The green revolution resulted in a record grain output of 131 million tons during 1978-79. This established India as one of the world's biggest agricultural producers. The public intervention programmes had emanated the food shortages in India, like Public Distribution System (PDS). According to government's own estimate over 1.3 mt of food grains was wasted in the godowns of the Food Corporation of India (FCI) in a span of 10 years from 1997 to 2007. It was enough to feed 10 million people for one year. India loses an estimated over Rs. 58,000 crore of food grains every year due to wastage. The Planning Commission of India, the key policy advisory body has admitted that even though self-sufficiency in food production has been achieved, the population still lacks access to balanced food. The government has brought in a proposed legislation known as National Food Security Bill, 2011 under which 75% of the rural households will get subsidized grain under the epochal law (Das Sandip).

The population is projected to grow from 4.7 billion in 2005 to 5.1 billion by 2050. To feed a population of 5.1 billion, regional food production must increase dramatically by 2050. Because fewer farmers will have to feed more people with increasingly deteriorating resources, one is tempted to suggest that agriculture land could be expanded by bringing more land under agricultural use. In addition, Asian agriculture will have to cope with dangers from climate change. It presents a partial set of options addressing the elements of the framework are; Start a Second Green Revolution, Set the fundamentals right, invest more on food production and agriculture noting that better targeting of investment in agriculture is the best insurance against covariate shocks (Mukherjee Amitava (2009)).

It analyzes the impact of change in government expenditure and investment in agriculture and on the food situation in India and the impact of economic policy on food security. Purchasing power is the root cause for the declining food security in our country, especially among the rural poor. To a large extent, the neo liberal policies pursued in the post-1991 period have aggravated the situation by the shrinking demand due to lack of purchasing power. The decline in the public expenditure has affected the food security both from the demand and supply side though the demand side problems are more severe. To counter this situation, there is a rise in government expenditure especially on rural development. This must include setting up of irrigation work, extension of and provision of adequate credit facilities and provision of subsidies on farm inputs. The 'food for work' programme should be revitalized. This will provide adequate purchasing power in the hands of rural masses and will also reduce the excess buffer stocks of food grains of the central government (A.N. Shukla et.al; (2012)).

Raghavan M (2006) depicts the state intervention in the market for food grains; the accumulation and depletion of stocks were more or less predictably associated with the size of the crop. India's history of wheat imports has been guided more by political considerations than by food security concerns. After a gap of six years, the government has again resumed large-scale imports of wheat. In early February, when there was hardly a month and a half for the rabi harvest to commence, the government allowed duty free import of five lakh tones of wheat for open market sales in the southern states, especially Kerala and Karnataka, where wheat prices were ruling high. Several observers have expressed uncertainty about the explanations given by the government for the largest ever wheat import in a single year so far. First, it was eager to bring down wheat prices in Kerala and Karnataka is un-convincing. Wheat is not a staple in the south. Kerala is a rice eating state and in Karnataka, rice and ragi are the main cereals of the common people. Second, wheat prices in southern states are generally higher than in the major wheat producing states of Punjab, Haryana and Uttar Pradesh. Third, had the government been concerned with buffer stocks, it should have exercised caution while dealing with whatever was

available in the central pool. Finally, the argument that the government was compelled to go in for massive imports because of a fall in wheat output and this therefore constrained the FCI in meeting its procurement target fixed for the season is not factually appealing. That apart, the experience in recent years shows that wheat procurement is not exceptionally sensitive to the volume of production. There were several instances in the past when the procurement and production of wheat have moved in opposite directions.

Sukhjeet K Saran and Richa Sharma (2012) explore the possibility of augmenting food grain production in India as well as in Punjab in future. In 1960-61, the per capita availability of food grains was an increasing trend, but in the 1990's, especially during the latter half of the decade, it has declined sharply. The increase in area under non-food crops has decreased the per capita availability of food supply in many states in India. Punjab is self-sufficient in food grain production and is a food grain surplus state.

S S Kalamkar (2012) explains the challenges to food security, which come mainly from the slow growth of purchasing power of the people in the rain-fed eco systems. The chronic food insecurity which is primarily associated with poverty still persists in the country. The per capita per day availability of food grains in India is almost stagnant during last decade. Though physical access to food has achieved, economic access at the micro-level lagged behind indicating food and nutritional insecurity. The poor agricultural productivity and production and low level of food grain output resulting from the low level introduction of agricultural/crop technologies; poor rural infrastructure; high vulnerability of crop production to natural disasters are some of the reasons for the high degree of food insecurity. In order to ensure food security on a sustainable basis, importance should be given to the adequate supply of irrigation water to sustain the growth in agricultural production; water security for poor farmers to grow food for subsistence, and adequate economic incentives for farmers to maximize their production from the available land and water with least environmental consequences.

India has made enormous progress in providing food security to its people. Per capita calorie consumption increased 20 percent between the early 1980s and 2000. However, a sizeable share of the population still lacks access to sufficient quantities of food. Poverty remains a problem in that nearly a third of the country's population lives below the poverty line. In the 1990s, rising prices of staple foods was the principal constraint in improving economic access to food. This increase was in contrast to a declining historical trend and reflects a fundamental contradiction in India's food policy. Policymakers seek to provide low-priced food to consumers while supporting producer prices. Mounting government expenditure required subsidizing both farmers and consumers through price policies, implying the need for policy alternatives to address the trade-off between the welfare of the poorer consumer and that of the producer. A significant imbalance arises as Indian policymakers, operating through the FCI; pursue conflicting objectives of providing low-priced food for consumers while increasing support prices paid to farmers. Farm price increases tend to be passed to consumers, whether they seek access to food through the PDS, India's main safety net mechanism, or through private retail markets. Policy alternatives to address the growing tradeoff between the welfare of the poor (who are net consumers) and that of producers can deliver strong improvements in food security (Persaud Suresh and Rosen Stacey (2003)).

It exposes the food policy of India from food security to food deprivation. Several measures were initiated to achieve the raising food production and improving food availability. These included price assurance to producers using the system of minimum support price implemented through obligatory procurement, inter and intra year price stability through open market operations, maintaining buffer stocks, and distribution of food grains at reasonable prices through the public distribution system. From a situation of massive shortages, India has emerged as a grain surplus country, and food security has been attained at the national level. A strong base has been created for grain production and meeting grain demand in the medium term. Prices of basic food items have remained relatively stable. The policy has had a positive impact on farm income and led to an economic transformation in the well-endowed, mainly irrigated, regions. Indian consumers meet their demand for



cereals from purchases in the open market and from supply through the public distribution system. About 91 per cent of demand is met from the open market and the remaining 9 per cent from PDS supply. The most serious implications of accumulation of very large quantities of rice and wheat in government stocks are on food security and fiscal resources. Apart from these, the accumulation of grain stock beyond reasonable limits affect export performance and participation of private trade in marketing. In order to achieve the goals of the food policy, the government has been procuring a substantial part of marketed surplus from selected food surplus states (Chand Ramesh (2005)).

The outcome in terms of food security and nutritional status will depend crucially on relative price movements along with changes in income levels (Manoj Panda and Ganesh Kumar. A (2009)).

Food and nutrition security are intimately interconnected, since only a food based approach can help in overcoming malnutrition in an economically and socially sustainable manner. Food production provides the base for food security as it is a key determinant of food availability. By mainstreaming ecological considerations in technology development and dissemination, we can enter an era of evergreen revolution and sustainable food and nutrition security. Public policy support is crucial for enabling this. India's population is likely to reach 1.5 billion by 2030; the challenge facing the country is to produce more and more from diminishing per capita arable land and irrigation water resources and expanding abiotic and biotic stresses. India currently produces about 230 million tones of cereals to meet the needs of a population of 1.15 billion. The goal of food self-sufficiency however, unfortunately seems daunting especially in the context of the issue of producing enough and agriculture per se not getting the priority attention it deserves. The issue can be effectively addressed only when this is set right. Public policy support is crucial for ensuring this. Food security with home grown food grains can alone eradicate widespread rural poverty and malnutrition, since farming is the backbone of the livelihood security system in rural India. This will enable the Government to remain at the commanding height of the national food security system. Building a

food security system and containing price rise with imported food grains may sometimes be a short term necessity, but will be a long term disaster to our farmers and farming. A well-defined, pro-farmer and pro-resource poor consumer Food Security Policy is an urgent necessity (Swaminathan M S and Bhavani R V (2013)).

M S Toor et.al; (2012) examines the challenges and emerging trends in sustainability of food and nutritional security of India. India has made great strides towards increasing food grains production since mid-sixties. Increasing agricultural production and productivity is a necessary condition not only for ensuring national food security, livelihood security and nutritional security but also for sustaining the high levels of growth envisaged in the current plan. Capital investment in agriculture as a percentage of the Gross Domestic Product has been stagnating in recent years, although the capital expenditure in agriculture as a percentage of the GDP in agriculture has shown some improvement in the current five year plan. To fulfill the requirement of sufficient food along with nutritional security, a thrust on horticulture products is required. Raising farm productivity with adequate focus on rain fed areas, diversification of agriculture from just crop farming to livestock, fisheries and poultry and horticulture. While simultaneously addressing environmental concerns should be the focus for the agriculture sector. The consolidation of land holding in the rest of the country for proper utilization of natural as well as other resources in the agriculture sector.

The entire north-east has a deficit food production. In order to meet this deficit, the north-east is perennially depending on the rest of the India particularly since independence. The slow pace of urbanization and extremely sluggish and indistinct process of industrialization have failed to generate alternative means of livelihood for the surplus man power of the agricultural sector. Besides the state, which is the largest employer in the organized sector, is also engaged in gradual downsizing of the government machinery. Hence, employment in the public sector, instead of increasing, is decreasing in the wake of globalization and the public distribution system (PDS) is also dwindling. Besides, a large section of people have lost their land and livelihood as a result of environment, development and conflict induced displacement (Hussain Monirul (2004)).

The farmers' having the right to sell seed is an essential component of our food security and simply cannot be trifled with. The consequences of denying the farmers the right to sell seed will lead to impoverishment and dependence for farming communities. It will also affect on national security in a quite dangerous way. The denial of the right to sell seed will lead to loss of income for the farmer. Far more worrying is that it will lead to the farming community losing control over seed production. This will ultimately threaten self-reliance in agriculture (Sahai Suman (2000)).

Before the inception of economic reforms, the farmers were protected and supported by the government and the government has supplied all agricultural inputs at highly subsidized rate that resulted in the form of a revolution in Indian agriculture. It increased the food grains production by increasing the yield and area under cultivation. But, after the adoption of New Economic Policy, the Indian agriculture is maintained enough to survive on her own feet. The reduction in subsidiary causes to increase the prices of agricultural inputs. This ultimately adversely affected the food grains production and productivity. It reveals the decline in growth of production and productivity of total food grain production in post reform period. The growth of coarse cereal and pulses in post reform period has increased, but the growth of production and productivity of rice and wheat are adversely affected in post reform period (Ahmad Firdos and HaseenShaukat (2012)).

Shah Amita (1997) reviews empirical evidences on the changing patterns of food grain production in the post-reforms period and explore the feasibility of ensuring food security by improving access to land among the resource-poor households. There is a clear decline in the area under food grains in most parts of the country. The declining area was observed in several states like Andhra Pradesh, Bihar, Kerala, Orissa and Rajasthan right from the early 1980s. The process of diversification has been expedited during the post-reform period. During the 1980s, the decline in area was experienced by a large number of food crops except wheat and rice. Contrary to this the area under all the major oilseed-crops has increased. In the post-reform period, the pattern has remained more or less same except for the fact that maize has

gained in terms of area whereas rice along with some of the major oilseeds has lost some areas under their production. There has been a small shift in area from food grains to oilseeds in the post-reform period. In spite of the shift in area, per capita availability of food grains has shown marginal increase during the post-reform period. The shift towards oilseeds is not only important for ensuring self-sufficiency in meeting the increasing demand but, is also crucial for sustaining the economic viability of crop-production under the uncertain environment obtaining in dry land regions.

Ajay Kumar and Pritee Sharma (2013) explain the food security using regression models which show that for most of the food grain crops, non-food grain crops in quantity produced per unit of land and in terms of value of production climate variation cause negative impact. The state wise food security index and econometric model estimation reveal that the food security index itself gets adversely affected due to climatic fluctuations

Rao V M and Deshpande R S (2002) enlighten the food security system, and it is inherently costly as it is based on surpluses of two superior cereals; rice and wheat and generated in few green revolution pockets of Punjab, Haryana, and western UP. The system is far too centralized, hierarchical and bureaucratic to achieve cost effectiveness. The system is practically absent in some of the hard core poverty areas. The present food security system reflects two basic flaws in our policy making for agriculture and rural development. First, the problems of relatively better off sections of farmers receive far more attention in policy making than the deprivations suffered by the poor. Second, while the areas lagging in development like drought-prone areas urgently need investment and infrastructure, the emphasis in policies remains on temporary and ad hoc relief measures. It is important to realize that this is not a congenial setting for progress towards decentralization, debureaucratization and depoliticisation referred.

Over the years, stagnation in yield was observed which needs to be checked through location-specific technological and policy interventions in the

light of available natural resources and socio-economic constraints (Rooba Hasan and H.P Singh (2012)).

The food policy and agricultural development strategy adopted by India to improve food security situation paid rich dividends, and the ensuing improvements in food security can be accessed from several angles, i.e. agricultural price support policy, public-private share in grain trade, farm input subsidies, direct food and other assistance programmes, distribution of subsidized food grains through PDS, supplementary nutritional programmes, food for work and wage employment programmes, self-employment augmentation programme, food subsidy, food marketing system, marketing channels and market structure. These programmes are to increase food production and the strategy to improve food security (Acharya.S.S (2006)).

Suryanarayana M H (1997) enlightens the emphasis on investment in human capital by way of improvements in food and calorie intake for efficiency and economic growth. India has achieved considerable food security in the post-independence period in terms of conventional measures of economic and physical access to food. However, these macro measures, being summary measures, do not reveal much of the dynamics of changes in institutional and production conditions and their implications for food security at the macro level. There is a need for a shift from the current emphasis on productivity growth from improvement in resource allocation, towards productivity growth from improvement in human capital, and in turn, towards policies for public investment in human capital.

### **1.2.3. Demand and supply side aspect**

Grain prices have risen dramatically during the past 18 months and are likely to stay high in the medium term. This will pose a serious threat to food security in India and other developing countries. Rice prices have increased by about 40 per cent over these two years. The current prices of cereals are so high that they do not conform to the cyclical fluctuations of the past. The rise in prices is on account of both demand and supply side factors. The use of grains and other agricultural products

as feedstock to produce biofuels in the form of ethanol and biodiesel is the primary factor that has triggered an upward shift in the demand for grains and has caused a major surge in prices. This has been particularly beneficial for developed countries like US and European Union, which can give support and subsidies to their producers for producing biofuel crops for domestic use without inviting the ire of other countries at the World Trade Organization. The second factor on the demand side is the ongoing shift in dietary patterns towards livestock and high-value agricultural products. On the supply-side, world production of cereals has remained stagnant around 2,100 million tones (mt) after 1996, whereas world population has been increasing by about 78 million per year. Consequently, per capita production of cereals in the world declined from 362 kg in 1997-99 to 336 kg in 2005-07. After 1996, cereal production was at its lowest in 2005-06 and 2006-07. Wheat production in 2007 suffered a setback due to drought in Australia and unfavorable weather conditions in Eastern Europe. A significant supply-side factor behind rising grain prices is the increase in the price of crude oil, which has raised the cost of production of agricultural products substantially. Due to all these reasons, grain markets are undergoing structural changes which will keep nominal grain prices high in the medium term (2008).

The countries in south Asia have a number of common features such as high man land ratio, large share of agriculture in Gross Domestic Product, high proportion of labour force in agriculture, weak infrastructure, low per capita income and a high proportion of population below poverty line. Rapid population growth and increased income levels during this period has contributed to a substantial increase in food consumption requirements, which could not be met in full due to slow production growth and inability to import food on account of unfavorable foreign exchange position. To achieve the preferred effect of food security through stability in consumption levels, it is imperative to achieve some level of stability in domestic production levels, especially since the other options of trade and aid may have only limited scope in the south Asian region. On the aggregate demand -side, population and income growth are two important factors contributing to the growth of food demand. The prospects of south Asian countries achieving food security in the broader

sense during the coming decades will depend on a number of simultaneous measures towards increased food production especially through technological change, population control, building up adequate buffer stock, target oriented programmes for the poor and generation of income and employment opportunities (George P S (1994)).

Kalamkar.S.S and Sangeeta Shroff (2012) describe the agriculture in South Asian Countries now intertwined with many tribulations pose a threat to food security, i.e, low equilibrium trap with low productivity of staples, supply constraints, high prices, and un remunerative returns to farmers and area diversification towards commercial crops. Food production is unable to keep pace with population growth and the increasing productivity of food grains for which there exists great potential along with a well-organized distribution channel that would greatly help to uphold the food security in the country.

Timmer Peter C and Dawe David (2006) elucidate the availability dimension of food security. At the macro level, policy-makers have an opportunity to create the aggregate conditions in which households at the 'micro' level can gain access to food on a reliable basis through self-motivated interactions with local markets and home resources. Therefore, the perspective taken is primarily an economic one. These characteristics of rice-based food systems forge a strong link between politics and economics a link that policy-makers elected or not see as a public mandate to deliver food security.

Otsuka Keijiro (2013) explicates the food problem or the problem of food insecurity in a decisive manner and it tends to arise in the transition process from the extensive farming system relying on area expansion to the intensive farming system dependent on the intensive use of labor and other non-land inputs. In the early phase of this process, the food supply often fails to catch up with the increasing demand because the uncultivated land is exhausted, but yield-enhancing technologies and production methods are yet to be developed and disseminated. Grain imports increase as the wage rate increases further because the comparative advantage in food

production tends to decrease in land-poor countries where farm size is small and hence, labor-intensive production methods are used even when the labor cost is high.

Kannan K P et.al (2000) attributes the various dimensions of the food security system. Food security has a number of dimensions that go beyond the production, availability and demand for food. It is a question of the ability to access food for all the people at all times to lead a healthy life. The present level of food grains production may not be sufficient to meet the growing food demand in the coming decades. The projected supply of food grains will be lower than the demand for food grains by 36 to 64 million tones, if population, demand for food grains, and livestock feed continue to grow as in the past. This simply means that even if the present rate of food grains production is maintained, some of India's population will experience hunger and starvation in the coming years. International trade is the dependable mechanism for food security. The present PDS system is meaningful only in Kerala, Andhra Pradesh, Tamil Nadu, Jammu and Kashmir, West Bengal, Karnataka and Delhi. In all other states the coverage is quite low, the leakages are high and hence it is hardly an instrument for ensuring access to a minimum food to the poor. For improving supply of food grains and ensuring the sustainability of an efficient system of agriculture, adequate investment in agricultural infrastructure and Research and Development are needed.

Food availability provides access to food and in turn increases the nutrition status among the households. India is more or less self-sufficient in cereals but deficient in pulses and oilseeds. Due to changes in consumption pattern, demand for fruits, vegetables, dairy, meat, poultry and fishery products has been increasing. There is a need to increase crop diversification and improve allied activities. As economic growth picks up there is a change in the dietary patterns wherein people substitute cereals with high value food. Even though self-sufficiency in food production has been achieved, the population still lacks access to balance food. It is a matter of concern that even though cereal production has kept pace with the increasing requirements and average per capita intake of cereals have remained satisfactory. (Renu Martolia (2012)).



S.K.Govil et.al explains the importance of increase in the per capita availability of food grains and emphasizes to ensure the balanced food for ensuring nutritional security. India's total food grain production has increased at an annual growth rate of about 2 percent during the period 2000-01 to 2010-11, which is mainly due to increase in productivity. The per capita cereal consumption showed a declining trend in both rural as well as in the urban areas. The total consumption expenditure has increased many times both in the rural and urban areas and the expenditure on food items exhibited a declining trend during this period. The food basket was found to be diversified both in rural and urban areas with higher levels of per capita consumption expenditure on milk and milk product, fruits and vegetables, meat etc. The per capita calorie intake declined in rural areas, whereas in urban areas it increased slightly during 1972-2010. Similar to calorie intake, protein intake has also shown a declining trend and fat intake showed an increasing trend in rural areas, whereas in urban areas, both the protein and fat intake indicated increasing trend

The Economic Survey 1995-96 was ecstatic about rice and wheat emerging as major export commodities and about the use of 'surplus food grains. Even before 1996, we were compelled to arrange emergency import of two million tonnes of wheat. Such fitful interventions reflect neither good food policy nor good food administration. This has exposed the vulnerability of the Indian economy in terms of food security, and also highlighted the importance of supply-side factors in sustaining price stability. Inflation cannot be controlled by the one-point formula of controlling money supply. There has been a considerable discussion on the revamping of the public distribution system (PDS). It should be recognized that streamlining the food administration is equally important. The recent rise in wheat prices to unprecedented levels was not so much a reflection of the supply-demand imbalances as in aptitude of food administration (Majumdar N A (1997)).

The demand for rice and wheat is determined simultaneously based on their relative prices, taking into account substitution possibilities in consumption. Aggregate supply response for each cereal is assumed to depend on own expected future market price with producers having rational price expectations. The

government is assumed to maintain prices within a specified price band through either buffer stocks or variable levies/subsidies on trade itself (Srinivasan P V and JhaShikha (1999)).

Jayanti Kajale and Sangeeta Shroff (2012) describe the role of and problems associated with the procurement and distribution mechanisms of the government in achieving food security. The demand for food grains is increasing with increase in the size of population, the sluggish growth in supply of food grains in posing a threat to India's self-sufficiency in this regard. It is revealed that the activities of Food Corporation of India (FCI) such as procurement and public distribution of grains under food management policy through its instruments of buffer stocks, minimum support prices and issue prices have not been able to meet the demand for food grains in the open market segment as well as in the controlled segment adequately. This has resulted not only in coexistence of widespread hunger with adequate food stocks with the government but also in rise in open market prices of food grains. In order to solve the issue of food security, reforms such as strengthening of the PDS, timely release of the buffer stocks, improvement in the storage facilities for maintaining quality of stocks, extending and strengthening procurement operations of FCI to the north eastern states etc. have to be undertaken so that the country becomes self-sufficient in food grains and will no longer have to resort to export bans to safeguard domestic requirements

Prahadeeswaran .M et.al; (2005) expounds the efficacy of the buffer stocking policies is reflected in the stability of food grain consumption and prices. The annual food subsidy involved in maintaining the system is huge and share of food subsidy to the total government expenditure is rising. In the case of Minimum Support Price (MSP), farmers find it more lucrative to sell their produce to the government than to sell it in the open market. As any monopoly, Food Corporation of India (FCI) suffers from inefficiency. Physical storage of grain by government agencies can lead to several inefficiencies.

The food accessibility and food availability at household's level differ and behave differently across the regions and even within the states in the same

region of India. The analysis provides evidence that accessibility of food at household level is very closely related with available resources (land) and income. Also higher household income always did not ensure the food accessibility which mainly depends on the nature (daily, monthly and annual) of income from different sources. Decomposition analysis suggested that income from livestock activities and wages and salaries is more inclusive in terms of ensuring the food security at household level. The binary logit estimates shed light on the determinants of food security (Shiv Raj Singh and K K Datta (2012)).

#### **1.2.4. Policies and programmes facet**

India has a sharp focus on the question of food security. In recent years the stocks held by the government has exceeded minimum required levels and there is a phenomenon referred to as, a paradox of poverty amongst plenty. India government recognizing right to food and implementing various schemes to ensure food security, like Targeted Public Distribution System (TPDS), Mid Day Meal Scheme (MDMS) etc...., but the operational challenges like insufficient quantity and poor quality of grains, unsatisfactory administration etc... led to the failure of these schemes. India does not have a problem in terms of physical availability, as the production of food grains is more than adequate. Corruption is eroding the well-designed schemes. As the problem of food insecurity relates to both the demand and supply of food, a solution could be to empower people towards greater purchasing power as well as addressing the inadequacy of the distribution system and checking corruption and leakages awareness among people with regard to their right to food can escalate the process of equitable distribution and thus help to realize the right to food for all citizens (George Cheriyan (2006)).

The state's role in strengthening food security is more prominent in ensuring availability of food and ensuring its access by the households particularly the poor households. State interventions are of direct as well as indirect nature. If food grain markets perform these functions efficiently everyone will benefit and prospect of extinguishing food insecurity will brighten. Decentralization has imparted new role to the institutions of civil society at the village level to which we have not given

adequate attention. In the first phase of decentralization, the agency functions are more important. Another important function of the grass root organizations is to respond to the state initiatives and point out the lacunae in their functioning. The third role of the civil society, i.e., a proactive role in ensuring food security is an ethical role, moored in the principles of mutuality and fellow feeling (Vyas V S (2000)).

India was successful in achieving self-sufficiency by increasing its food production and also improved its capacity to cope with year-to-year fluctuations in food production; it could not solve the problem of chronic household food insecurity. This necessitated a change in approach and as a result, food energy intake at household level is now given prominence in assessing food security. It has become common practice to estimate the number of food insecure households by comparing their calorie intake with required norms. A distinction is made between transient and chronic food security. Transitory food insecurity is associated with the risks related to either access or the availability of food during the off-season, drought and inflationary years and so forth. Policies such as those relating to price stabilization, credit, crop-insurance and temporary employment creation are initiated for stabilizing the consumption of the vulnerable groups. In contrast, the problem of chronic food insecurity is primarily associated with poverty and arises due to continuously inadequate diet. Vision 2020 should aim at complete eradication of food insecurity both chronic and transient. Productivity generated by technological innovation particularly in less endowed areas and vibrant rural non-farm sector hold the key to eradicate food insecurity (Radhakrishna R and Venkata Reddy K).

Ray Ranjan (2007) explains the cereal shares in the household budget and the household's overall calorie consumption on a greater importance of PDS. Both as a source of subsidized calories and as a poverty reducing instrument, the PDS is of much greater importance to female-headed households than it is to the rest of the population. Another important result is that, notwithstanding the sharp decline in their expenditure share during the 1990s, rice and wheat continue to provide the dominant share of calories, especially for the rural poor. The overall message is that especially in a period of significant economic change, one need to go beyond the

standard expenditure-based money metric measures to assess the changes in the living standards of households. The results of this study also suggest that especially in a period of economic reforms, pro-active government interventions need to be made to stem the rise in the relative price of cereals vis-à-vis non-cereals. It shows that expenditure-based figures of cereal shares in the household budget understate the true importance of the cereal items in the household's overall calorie consumption. Moreover, the sharp decline in the expenditure-based share of cereals in the reform decade in India did not translate into declines of similar magnitude in the calorie shares of cereals. Notwithstanding the significant shift in preferences towards non-cereal items such as meat, fish and eggs, and fruits and vegetables, the PDS items of rice and wheat continue to supply over 50 per cent of the household's total calorie intake in the new millennium. The calorie share of cereals increases sharply as one considers households at the lower end of the expenditure distribution.

Dev Mahendra S (1996) elucidates the poverty and food security problem with emphasis on Public Distribution System (PDS) and employment programmes (EGS for short) in Maharashtra and West Bengal. He considers poverty as the major determinant of chronic and to some extent transient food insecurity. The poverty line for 1987-88 shows that rural areas in West Bengal and urban areas in Maharashtra are expensive places to live in India. In both these states, the agricultural labour households constitute nearly 50 per cent of the poor in rural areas. In general, per capita expenditure and person day unemployment rate are inversely related in rural and urban areas of both the states. Turning to PDS, the estimates on per capita PDS quantities as well as PDS quantities per market dependent persons show that there is urban bias in both Maharashtra and West Bengal. PDS alone will not solve the problem of food security. Apart from higher economic growth, a mix of policies such as effective implementation of anti-poverty programmes including PDS, controlling inflation, improving health facilities is needed for increasing food security in the two states of Maharashtra and West Bengal and in other parts of the country.

In the budget food subsidy is in essence not a consumer subsidy to the hungry poor but a cover-up for the inefficiency and corruption of FCI and

producer subsidy to the rich farmers lobby. To provide stability to food markets and prices, it calls for the intervention of state civil supplies departments in the international futures trade in grains and swift import and unloading of grains. For taking care of the poor who cannot buy food at market prices it recommends a programme of food stamps. The current PDS is no favour to the hungry poor. But instead of building an argument suggesting means to actually reduce hunger in the country it goes on to argue for privatization and globalization without showing how the two will reduce hunger.(Kumar Sanjay (2000))

Panth S Ananth (1997) mentioned about the rural household food security and it can be achieved basically by four means, i.e.; access to land, wage employment, self-employment; and the combination of the above three factors. He discussed about the important social measures taken by the government like, providing food grains at affordable price all through the year, providing wage employment during lean seasons of employment, providing pension to the old people and physically-handicapped and also the adequate social measures of the government makes it inevitable to have alternative arrangements. A few important networks are wages in kind, borrowings in kind, soft loans, and low prices of food grains and barter system. Food security can be maintained by the rural households better through their social networks rather than government support. The social networks function better in the irrigated areas than in the rain fed. In rain fed areas food security is achieved through stabilization in food grain yields. The government policies of PDS and wage employment programmes are supplementary to the existing social networks. For a developing country like India, it is not feasible, economically and administratively, to provide employment and also food grains to those below poverty line. Social networks can reduce the burden of subsidy on the government. They make rural systems more resistant and can help in reducing rural-urban migration

Beginning with supply side issues of availability, moving on to demand side issues of economic access, nutrition and absorption and finally to policy choices in the current global economic environment (Jha Shikha (2002)).Farmers' wholehearted support and their economic wellbeing are vital for creating a sustainable

food security system in the country. The Right to Food law could be implemented only with the help of farmers (Swaminathan M S (2010)).

Swaminathan M S (2012) explains the food security status in India and evokes the role of food as people's right. The brightest jewel in the crown of Indian democracy will be the conferment of the right to food through the National Food Security Act, recently introduced in Parliament. When it is implemented, this country will have to take the essential steps necessary to convert Gandhiji's dream of a hunger-free India into reality. It is important to realize the significance of the Act in the light of the conditions that prevailed in India during the first 20 years after Independence. During the 1960s India was the largest importer of food aid, mainly under the PL480 programme of the U.S. In fact, during 1966, over 10 million tons of wheat was imported leading to India being labeled as a nation surviving on a ship-to-mouth basis. Today, India is set to commit over 60 million tones of home-grown wheat, rice and nutri-milletts to fulfill the legal entitlements under the Food Security Act. When it becomes law, India will operate the largest social protection programme against hunger in human history. The Bengal Famine of 1942-43, which claimed over two million lives, provided the backdrop to India's Independence in 1947. The country's population was then a little over 300 million, that is, 25 per cent of the current population. During the first two Five Year Plans (1950-60), emphasis was placed on enlarging the area under irrigation and on fertilizer production. Scientists began extensive experiments in the 1950s to assess the response of rice and wheat varieties to fertilizer application. In July 1964, the whole-hearted support to spreading high-yielding varieties on a large scale, together with irrigation water and mineral fertilizer. In 1968, Indian farmers harvested about 17 million tons of wheat; the earlier highest harvest was about 12 million tons in 1964. Such a quantum jump in production and productivity led Indira Gandhi to announce the Wheat Revolution in July 1968. Green Revolution involved synergy among technology, services, public policies and farmers' enthusiasm. Farmers particularly those in Punjab converted a small government programme into a mass movement. The Food Security Act will confer double benefits – procurement at a remunerative price for the public distribution system will stimulate production, and consumers who need social support

to ward off hunger will be able to have economic access to the food needed for a productive life. The future of food security will depend on a combination of the ecological prudence of the past and the technological advances of today

Per capita income of households shows the same pattern of relationship with nutritional status. A gendered analysis of access to productive resources, decision-making powers and intra-household allocation of work responsibilities is also needed to draw clearer linkages (Parasuraman P and Rajaretnam T (2011)). Confirming targeting errors and high leakages, the impact of these in-kind food transfers on poverty reduction, particularly of PDS in 2009-10, was found to be much larger than is usually acknowledged. Poverty reduction is only instrumental to the stated purpose of these interventions, which is access to food and improvement in nutrition. Moreover, the PDS continues to be controversial because of its leakages; and arguments to replace these by food coupons and cash transfers have resurfaced very strongly in the course of the debate on the National Food Security Bill/Act (NFSB/NFSA). Food self-sufficiency and income growth have reduced the need for such direct food interventions; we report a significant increase in the contribution of such in-kind transfers to both poverty reduction and nutrition (Himanshu and SenAbhijit (2013)).

Ramohan Anu et.al; analyze food security/insecurity as a function of the household's socio-economic and demographic characteristics, its access to social safety nets such as the PDS and MNREGS, and the extent to which they rely on these social safety nets to meet their food requirements. Despite making significant economic progress, food insecurity levels remain high in India, with an estimated 21% of the population being food insecure. Our analysis finds strong evidences to show that poverty, income from agriculture, religion and district heterogeneity influence food security. Food based safety nets appear to be implemented differentially.

The estimates of food grains production and requirement for the state of Kerala indicated that overall cereals and pulses requirement would be in deficit condition and the efficacy of any food security at the household level and



individual level can be judged only with reference to the PDS through which it is translated into action (Gajendra Singh and T.S Bhogal (2008)).

The distribution of households by ration card type among major states and major social groups; in 2004-05, the percentage of households reporting consumption during a 30-day period, from PDS and the reliance on PDS among major states in 2004-05. The need of the hour is not universalization of the PDS, but a revision of the food security norm, a BPL-friendly PDS and its efficient functioning (Suryanarayana. M. H (2008)).

Utpal Kumar De (2000) reflected the food grain requirement and per capita food grains production in the state, changing cropping pattern, the trends of PDS in Tripura. The state has not been successful in achieving food security by some aggregate measures of physical and economic access to food. Decreasing per capita food production and its availability leads to more insecurity in terms of physical access along with decreasing real SDP reveals reduction in economic access to food. The quantity of PDS supply has not been fully utilized which indirectly means excess supply.

Most of the villages without PDS shops are in UP and Bihar. A second factor conditioning Dalit access to the benefits of the PDS is the location in which the shops are physically situated. The third and most commonly reported form of discrimination in the PDS is caste-based favouritism by the PDS dealer in the distribution of goods (Thorat Sukhdeo and Lee Joel (2005)).

The changes in the PDS or the system of delivery of subsidized food during a period of structural adjustment, the period since July 1991, when there have been significant shifts in policies following a fiscal and balance of payments crisis. There are large gaps in the existing system of delivery of subsidized food, and large numbers of the income-poor are excluded from the PDS. No serious effort has been made by the central government and by a majority of state governments in the last few years to alter this situation by improving the delivery system and by specifically attempting to include the poor in the PDS (Swaminathan Madhura (1996)).

Dubey Amaresh & Srivastav Nirankar analysis the households that have access to the PDS, what they purchase, and what are their rupee savings due to their access to the PDS. Its impact on poverty levels due to the existence of the PDS. Almost half the rural population and a quarter of the urban population report consuming fewer calories than they require as per the widely believed norms. Calorie deficiency appears to be highly dependent on the type of commodities being consumed - for instance wheat eaters appear to be less calorie deficient than rice eaters. The PDS is barely touching the tip of the iceberg where helping the worse-off sections are concerned. Ideally, poverty incidence by the conventional measure (HCR) and calorie deficiency should not be very different from each other. We find that in rural sector the former is lower than the later. In the urban sector, its reverse holds true. The impact of PDS on the incidence of calorie deficiency and poverty does not appear to be significant. Finally, it is also important to note that the PDS is not strong enough and the only instrument to ensure the food security of the poor, because it serves the purpose only to those who have purchasing power and are ration card holders.

Ghumaan Kaur Gurdeep and Dhiman Kumar Pawan (2013) review status of public distribution system and its relationship with the problem of food security and poverty incidence among the states of India. The close linkages existing between food security and Public Distribution system (PDS), socio-economic development, rural health, human rights and improving human development indicators in the developing country like India. Poverty indices for all the states in India are calculated and then it appears that the PDS is widely accessible to the households in the region. The PDS plays a relatively more important role in food security of the households rather than poverty reduction. Thus the current system is beset with significant level of adulteration, pilferage and Corruption and in order to remove pilferage, adulteration, and Corruption, there seem to be some improvements in the functioning of PDS. Therefore, successful implementation of PDS is a big challenge in order to gain food security in India.

The system of rice scheme in the state covers the rural areas as well as to that extent differs from the PDS system in the rest of the country other than the one prevailing in Kerala state. In Andhra Pradesh the scheme was extended to the rural areas without making the eligibility requirement more rigorous and also without introducing any extra measures to improve the indirect targeting. This resulted in substantial budget commitments on behalf of the government in implementing the scheme. Food subsidies which aim at providing food security can be a part of much wider policy package of social security aimed at improving the quality of life of the people or they can be implemented without being part of a wider package. The final effect of food subsidies depend not only on the level of subsidies but also on how they are financed. If the financing is done through progressive direct taxation, then the welfare effects of such a subsidy scheme are going to be far greater than if the same is financed by deficit financing leading to an inflationary effect on the economy. If the same is financed by commodity taxation the effect depends on the bundle of commodities taxed. Similarly, the effect of food subsidies depends on the mobilization of quantities needed for feeding the public distribution system. The Food for Work programme may be an alternative to the rice subsidy scheme due to the huge investment needed to implement it (Rao Krishna I Y R (1993)).

K P Kannan explains 'the remarkable record' of Kerala in reducing child deprivation in general. The public distribution system, the free noon-meal scheme for school children, supplementary nutrition for pre-school children and old-age pensions has established a bottom line of food security. Joseph writes that 'what the noon-meal is really doing is to break the fear of future food insecurity'. In the context of the present situation in India, where there is a large 'food surplus' with burgeoning food stocks, the solution of the child labour problem would profit immensely from the usage of these food stocks (Lieten (2003)).

Public distribution system was utilized to its fullest extent by the rural households notwithstanding the occupational categories. The Almost Ideal Demand System (AIDS) analysis to estimate the household demand revealed that in all the three categories of households, any higher level of income would influence the

pattern of rice consumption followed by vegetables and milk. Fruits were found to be an inferior good for all the three categories of sample households. Oil, pulses and vegetables were found to be the complementary goods in all the three categories, showing a dismal state, since these goods are the most important dietary components for all age groups. Regarding food security, the agricultural labour and other worker households are found to be food insecure. Hence, a revamped direct food assistance programme by the government along with its other safety net programmes for rural poor can be oriented in order to address these serious food security issues in the rural areas. (T Ponnarasi and K Sita Devi (2012)).

The National Food Security Mission (NFSM) was launched in 2007-08 in 312 identified districts of 17 major states covering 136 districts under rice, 141 districts under wheat and 171 districts under pulses. At least 20 million tonnes additional food grains production were to be realized by 2011-12, with a break up of 10 million tonnes of rice, 8 million tonnes of wheat and 2 million tonnes of pulses. In Bihar an ambitious reform of the PDS was launched on January 26, 2007; a coupon system. The state government claimed that the coupon system would empower the poor and stop black marketing, and it was not a simple coupon, but a powerful weapon in the hands of poor. Later, the coupon system of Bihar has failed to prevent corruption and currently focuses on 'targeting effectively'. The large exclusion errors of the BPL list can be avoided through the expansion of BPL list. A PDS dealer takes coupons while delivering partial entitlements or for that matter to get thumb impression on biometric device without delivering any amount of food grains (Hem Chandra Lal Das (2012)).

Ganesh Kumar A et.al; (2008) suggests an agenda for reforming the food grain management system in India which is much more cost effective and also well targeted to achieve the objectives of food security than the existing system. It evaluates the price support, buffer stocks and procurement operations to public distribution through fair price shops for national food security. It revisits the rationale

of each one of these inter related components and analyses how far the objectives are being met and at what cost.

The bill marks a radical departure from the welfare approach to a right based approach. The bill is not based on an explicit concept of food security. Estimates of food insecurity are based on outdated calorie norms, and hence, are exaggerated. A food security strategy should consider availability, access, stability and safe and healthy food use subject to some norms (Suryanarayana.M.H (2013)).

The National Food Security Bill is based on Sarvodaya principles as it has adopted a human life cycle approach, looks at providing coarse grains at subsidized rates, giving impetus to the public distribution system, giving woman the position as the head of the family, and synergizing drinking water, sanitation, hygiene and food. The Bill would focus on three fundamentals of food availability, food access, and food absorption. Food availability should be assessed from home-grown food and not from what is imported. Food access depends on the purchasing power of the people, and food absorption means the amount the human body is able to utilize. Elaborating on food access and food absorption concepts, the purchasing power of the producer consumer of agricultural produce remained poor and that was why most of them who formed part of the 66 per cent of the country, could not get access to food. The absorption power of women and children was not to the full capacity because of various deficiencies, and hence malnutrition of the mother and children remained a grave problem. Biological models depend on synergy and symbiosis for their success. A Sarvodaya society, or a high synergy society, can only be built on the foundation of harmony with nature and with each other. The choice with us now is to choose between Sarvodaya or the universal good, or sarvanasha or universal destruction (2012).

Swaminathan M S (2010) explains the food security bill and its implications. The proposed Food Security Bill should adopt a three-pronged strategy that constitutes a Universal Public Distribution System for all, low-cost food grains to the needy, and convergence in the delivery of nutrition safety net programmes. Based

on Article 21 of the Constitution, the Supreme Court has regarded the right to food as a fundamental requirement for the right to life. Fortunately, we are moving away from a patronage-based to a rights-based approach in areas relating to human development and well-being. Numerous programmes have been introduced by the Government of India from time to time to improve nutritional status. To ensure food security for all we should be clear about the definition of the problem, the precise index of measuring impact and the road map to achieve the goal. The National Food Security Bill should be so structured that it provides common and differentiated entitlements. The common entitlements should be available to everyone. These should include a universal public distribution system, clean drinking water, sanitation, hygienic toilets, and primary healthcare. India should not lose this historic opportunity to ensure that it takes a development pathway with regard to the nutrition, health and well-being of every citizen as the primary purpose of a democratic system of governance.

(Srivastava Shreya) explicates the complementarity of the PDS under the National Food Security Bill (NFSB). How the present Bill has dealt with these issues and further given suggestions to make the system more efficient and better appealing to the public. India holds 67th position amongst a total of 122 countries, in the 2010 Global Hunger Index developed by the International Food Policy Research Institute. This is a serious concern among the various agencies involved and the people alike. In order to obviate the problem the government has finally introduced the National Food Security Bill, 2011. The Bill is a revolutionary piece of legislation. By providing such food security, the Bill will be a big leap in the direction of ensuring social justice to the people which is a fundamental element of the Preamble to the Constitution of India. It seeks to include within its ambit the poor, needy, children and pregnant and nursing mothers by integrating various schemes. One such scheme is the Public Distribution System (PDS). The PDS is a means of distributing food grains and other basic commodities at subsidized prices through 'fair price shops'. The scheme has been in existence for a long time now and has gone through many changes, such as shift from universalization to targeting, introduction of information technology and the like. However, there still exist problems like failure of precise identification of beneficiaries, leakages and diversions and great degree of

corruption. Therefore, firstly low productivity in agriculture must be attacked. This can be done by improving subsidies for farmers, giving them better quality fertilizers, pesticides and seeds. The next obvious step should be addressing the shortage of storage space for food grains in order to avoid wastage. These must be complimented with the improvement of the PDS.

Prachi Misra (2013) deals the fiscal implications and the distributional implications of National Food Security Act (NFSA). The food subsidy cost of implementing the FSA is estimated at RS. 124,502 crore for 2013-14. The paper titled as, The Food Security Act (FSA) Fiscal Implications: 2013-14 to 2015-16, not only deals with the fiscal implications, but also deals with the distributional implications of FSA. In addition to food subsidy, the other financial costs of FSA are setting up/running of state food commissions and District Grievance Redressal Offices (DGROs), expenditures on intra-state transportation of food grains and cash benefit to pregnant and lactating women etc... If implementation of the FSA requires merging the current classification under the Targeted Public Distribution System (TPDS) with new and more careful identification schemes, combining the grand fathering and misclassification scenarios could increase the incremental food subsidy cost of implementing the FSA in 2013-14 to Rs.55,726 crore.

Kirit. S. Parikh (2013) try to analyze the questions (objectives) like, the need for the Food Security Bill (FSB), its right for coverage, identification of beneficiaries, its effect on food grains production, its role on wipe out hunger and malnutrition, the FSB cost and there any better way, like, direct cash transfers in FSB. If resources are required for implementing FSB, they have to be found. It would be great if the government can find these by eliminating many other subsidies, such as on diesel and LPG. If not, FSB will only add to inflation, increasing poverty and hunger and neutralizing any benefit that may accrue to the poor from FSB.

Sally Trethwie (2012) explains the food insecurity situations in India, i.e.; mainly on access to grain. The paper titled as “India’s food Security Bill: A waste or win for the hungry; the food bill aims to reach 75 percent of India’s rural

population and 50 percent of the urban population. The bill ensures the implications of transforming food from commodity to public good. It argues that the grain currently distributed through Public Distribution System (PDS) is of low quality, in opportunistically delivered, stored in unhygienic conditions, lacking in micro nutrients etc and it warns that the bill will contribute to growing inflationary pressures. The current food bill does not reflect for local sourcing and cash payments to farmers. Whatever the food bill delivers in the short term for the desperately, hungry must be seen as a positive outcome.

NFSA relies primarily on the existing Public Distribution System (PDS) as the primary axis for ensuring food security. The shift to targeted PDS in 1997, which dismantled the earlier universal access at relatively low unit subsidies, replacing it with much higher unit subsidies targeted towards the poor, led to increase in leakages between 1993-94 and 2004-05, along with decline in percentage of households who actually accessed PDS cereals. The states like Chhattisgarh, Odisha and Bihar have used available technology and mobile based tracking system to reduce leakages. The main challenge of NFSA is that, there is no mechanism to identify the beneficiaries, and there are no clear guidelines for exclusion and inclusion. An alternative in the form of Socio Economic and Caste Census (SECC 2011) was available and have been used to identify the beneficiaries, and estimate the number of households eligible for the benefit in each state. Apart from the administrative and technical challenges, successful implementation of NFSA will also require political conviction and willingness to fight malnutrition (Himanshu Bhushan (2013)).

The principal concern seems not to ensure food security to all and therefore to ensure a nutritional minimum, but to contain the government's expenditure under the proposed NFS Act. After all, meeting the demand of the fiscal deficit is more important than putting in place universal rights to as a basic requirement as food. The Rangarajan Committee recommends a status quo on the present targeted PDS (TPDS) structure with lower prices for a slightly expanded BPL and higher prices for others. A universal PDS is the only option consistent fully with a right-based approach, and argues that feasible alternatives that are more universal and



less targeted are more likely to be effective in ensuring food security for the poor. Since targeting was introduced in June 1997 after a long experience with universal PDS, the food security cannot be attained without addressing issues of physical availability, distribution and stock management – it is not simply a matter of access that can be dealt with transfers, either directly in cash or through coupons or by differential pricing. It addresses concerns of the detractors but once rolled out, and if successful in reducing leakage while increasing access, could be converted easily to full universal PDS. All that is needed to achieve this is to set the percentage of Minimum Support Price (MSP) in the MSP-linked price so that this is the same as an acceptable price for the priority group (Himanshu and Sen Abhijit (2011).

The main problem is the Bill's framework for the public distribution system (PDS), which rests on a complicated division of the population into three groups: Priority, General and Excluded households. Each group is to have different PDS entitlements. It merely recommended that the coverage of Priority groups should be no less than 46% in rural areas and that of Excluded households no more than 10%. Abolish the distinction between Priority and General Households and give them all a common minimum entitlement. Indeed, the rationale of this distinction is far from clear. Neither the National Advisory Committee (NAC) nor the Rangarajan Committee nor any other expert group recommended that the proportion of Excluded households should be as high as 25% in rural areas and 50% in urban areas. Insisting after this exclusion exercise, on a further division among the non-excluded households into Priority and General Households is unnecessary, impractical, and counter productive (2011).

The bill states that there will be two categories of people – priority and general – under which 75% of the rural population and 50% of the urban population will be entitled to subsidized food grains and the rest will be excluded. While the government's bill has retained the monthly entitlement of the priority group of 7 kg per person as laid down in the NAC draft, it has further reduced the monthly entitlement of the general households from 4 kg per person to 3 kg per person. It goes on to say that the central government will determine the number of priority

households in each state based on state-wise poverty ratios to be updated from time to time. Even with regard to reforming the PDS, the bill does not say much, while the NAC had detailed proposals related to the management of fair price shops, procurement, transport, storage, transparency and accountability (2011).

### **1.3 Research Gap**

While reviewing various studies it is understood that, in the literature on food security, lot of studies have been discussed about the problem of food insecurity and the co-existence of availability, accessibility and affordability issues. A few studies discussed about the rural households and their food baskets. From those discussions, it is evident that, sufficient literature is available on the topic at macro level. Many of these studies came in late 1960's as a consequence of the agricultural reform, i.e.; the green revolution in the country, the implementation of economic reforms and the accomplishment of National food Security Bill. Hence still research gap remains at macro level. Most of the studies concentrated on the nutritional aspects, calorie intake, and distributional aspects of food security in the country. Coming to the Kerala case, there are only few studies focusing on the availability and consumption pattern of food and also especially among the rural households. The present work is a consolidated approach towards food security in Kerala among the rural households.

### **1.4 Statement of the Problem**

Due to the increase in population and decline in area under food crops, Kerala is facing a severe food insecurity problem. The trend in Kerala clearly postulates towards cash crops, rather than food crops, because of the more remunerative nature of the cash crops. Rice (The cultivation of food crop, the major food crop is paddy and its output is rice, quantitatively rice will constitute only 65 to 70 percent of paddy produced. In earlier literature, these two terms were used interchangeably. Later, based on the recommendation of International Rice Research Institute, Manila, the term rice is more preferred. Hence, in this study, hereafter the term rice is used irrespective of cultivation or output) is the staple food of Kerala, and

we produce only 15 percent of our requirement (Economic Review, 2015), so the remaining portion, depends on other states for our daily necessities. This will make a question of food insecurity and sustainability issues to the current age groups and the future generations. Thus, there is a shortage of supply of food items in respect the demand of the population. Moreover, there are many households in rural areas mainly depend on the basic public intervention systems for their food requirements. In rural fields, primary sector and their allied activities are the main occupation of the households and they are not much concerned about the food systems. So the learning is bidden with the food basket of the rural households and their determinant factors. Thus, the study is attempted with the following objectives.

## **1.5 Objectives**

The main objectives of the study are:

1. To examine the demand side and supply side availability of food in Kerala
2. To assess the food basket of rural households in Kerala
3. To identify the determinants of rural food basket in Kerala
4. To assess the impact of public intervention on food security in rural Kerala

## **1.6 Hypotheses**

1. There is significant relation between the supply and demand of food grains
2. There is significant relation between the availability, accessibility and affordability of food security
3. There is significant relation between the determining factors of rural food basket and the utilization of the provisions of Public Distribution System.

## **1.7 Methodology**

This section discusses the methodological aspects of the study. It deals with various sources of data, sample design, selection of the sample of rural households for data collection and the statistical framework for the analysis of data collected.

## **1.8 Sources of Data and Sample Design**

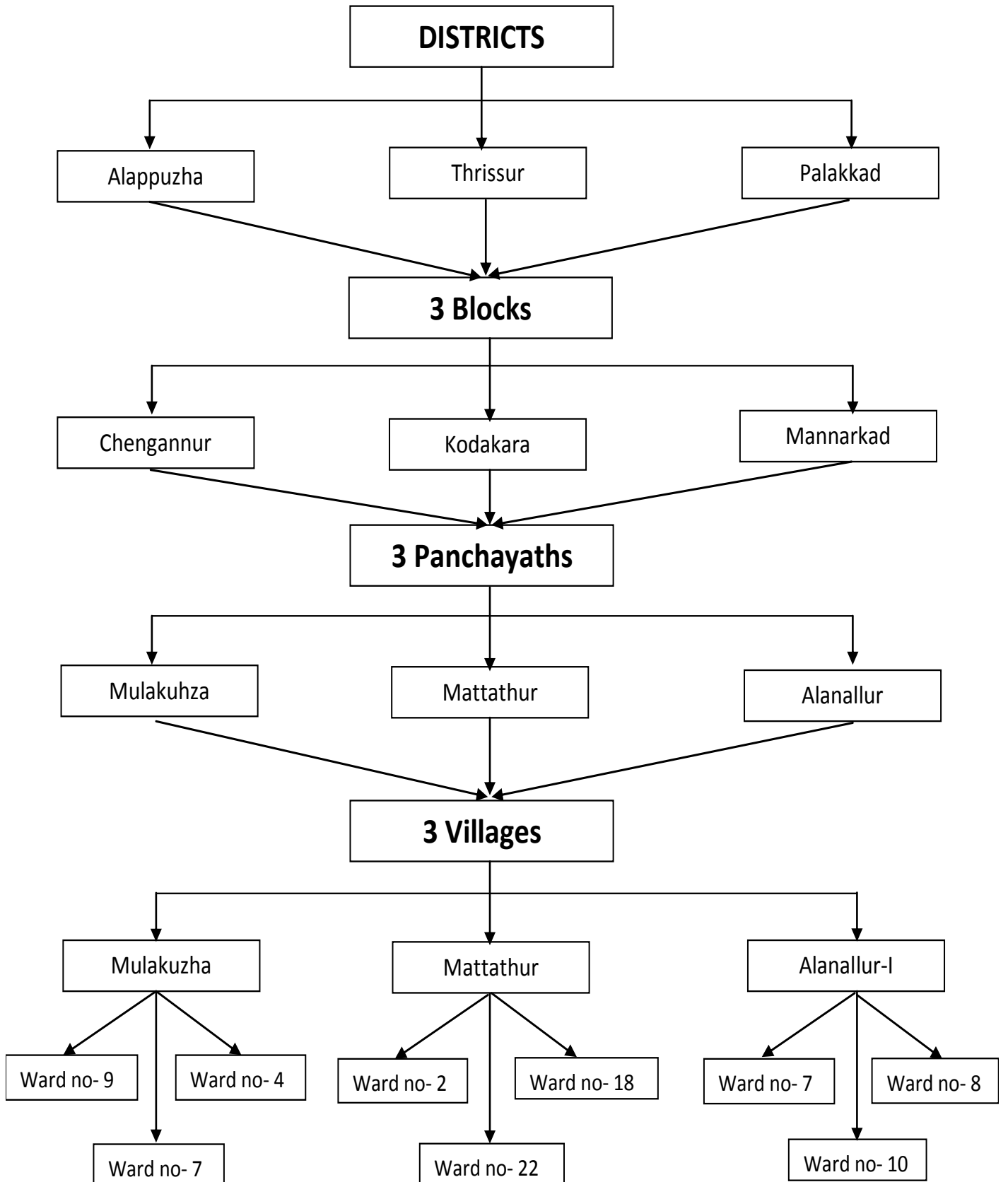
The study made use of both primary data and secondary data. Secondary data have been collected from various publications of Government of India, State Governments, Reserve Bank of India (RBI), National Bank for Agriculture and Rural Development (NABARD), Food corporation of India (FCI), State Civil Supplies corporation, Economic and Political Weekly Research Foundation (EPWRF), Kerala State Planning Board, Directorate of Economics and Statistics (DES) Kerala, Directorate General of Commercial Intelligence and Statistics (DGCIS), National Sample Survey Organization (NSSO), World Development Report, Kerala Development Report, Economic Survey, Economic Review.

Multi stage systematic random sampling technique was used to select the districts, blocks, Panchayaths and wards and the sample of rural households for the purpose of primary data collection. On the basis of the major food producing areas in Kerala, three districts were selected for the study, i.e; Alappuzha, Thrissur and Palakkad. The major area, production and yield of food crops in Kerala in 2014-15 occupies in these three districts. For these districts 3 blocks, Chengannur from Alappuzha district, Kodakara from Thrissur district and Mannarkad from Palakkad district were selected by taking into consideration the major food crops and the number of rural households so as to support the objectives of the study. Taking into consideration rural households, the area and production of cultivation under different crops at the state level and in the district level (major crops such as Paddy, cereals, pulses etc.) were stratified for the study. Out of these blocks, 3 Panchayaths were selected for the survey on the basis of the most number of rural households in these Panchayaths. The surveyed Panchayaths are Mulakuzha from Chengannur block,

Mattathur from Kodakara block, Alanallur from Mannarkad block respectively. Out of these Panchayaths, three villages were taken on the basis of most number of rural households in these villages, i.e; Mulakuzha village from Mulakuzha Panchayath, Mattathur village from Mattathur Panchayath, Alanallur – I village from Alanallur Panchayath respectively. Out of these villages, 3 wards were selected from each village for the study in accordance with the size of rural household's population. Ward-09, ward-04, and ward-07 were selected from Mulakuzha village. Ward-02, ward- 18, and ward-22 were selected from Mattathur village. Ward-10, ward- 07, and ward-08 were selected from Alanallur-I village. A field survey was carried out during the period from August 2016 – December 2016 based on personal interview by using a detailed pre-structured schedule. The schedule gives the detailed information on availability, accessibility and affordability of food crops, land use pattern, cropping pattern, sources and purchase of food items, determining factors of the food articles etc. The study also examined the food basket of rural households in Kerala and identifies the determinants of rural food baskets in Kerala. In order to make the study more articulate and ample 509 households in the rural areas were surveyed, on the basis of 10 % of the rural population in the selected wards in each village.

**Figure 1.1**

**Sample design**



## **1.9 Scheme/Plan of the Study**

The study is presented in six chapters. The first chapter deals with the introduction; which covers the literature review, research gap, statement of the problem, objectives, hypothesis, methodology and scheme of the study. The second chapter deals with the food security situation in India. Chapter three discussed the demand side and supply side availability of food crops in Kerala. Chapter four deals with the appraisal of food basket and identifies the determinants of rural food basket in Kerala. Chapter five deals with the public intervention to food security in Kerala. The summary of findings of the study with conclusion is brought out in the last chapter.

**CHAPTER -2**  
**FOOD SECURITY IN INDIA**



## **2.1 Introduction**

The intention of this chapter is to analyze the situation of food security in India. Food security is an important concern in the present world and it has an imperative role in the human life. The development of a nation can be achieved only through the healthy planning and implementation of the programmes related to the basic necessities of the common man and through the satisfaction and the attitude of needs of persons. Food security is a situation connected to the supply of food and the accessibility of the peoples in it. The food availability at reasonable prices to the common man is a sign of food security in the nation.

Food and Agricultural Organisation Reports (from 2000 onwards) show that thousands of people perish out of hunger, malnutrition and stunted growth around the globe annually. The poorer section of the society especially the rural poor, backward classes, landless labourers are the worst hit always. Most importantly, women and children are among them, who go to bed with an empty stomach and a lot of people still starve for a meal, a day, is a harsh reality. In the words of Dr. Norman Borlaug, “You can’t build a peaceful world on empty stomachs and human misery.” Thus, the concept of food security gains importance worldwide with great relevance in today’s scenario.

## **2.2 Food Security – A Global View**

The 1996 World Food Summit agreed on the definition of food security, which is used by Food and Agricultural Organisation (FAO) as “Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. The definition encompasses four dimensions: Availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid). Access by individuals to adequate resources (also called

entitlements)for acquiring appropriate food for a nutritious diet, utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being, where, all physiological needs are met, stability in the availability of and access to food, regardless of sudden shocks (FAO, 2006).

About 795 million people are undernourished globally, down by 167 million over the last decade, and 216 million less 1990–92. The decline is more pronounced in developing regions, despite notable population growth (FAO Report 2015). Globally, 108 million people in 2016 were reported to be facing crisis level food insecurity or worse. This represents 35 percent increase compared to 2015 when the figure was almost 80 million (Global Report on Food Crises 2017).

**Table 2.1**  
**Hunger around the world**

<b>Category</b>	<b>1990-92</b>	<b>2000-02</b>	<b>2005-07</b>	<b>2010-12</b>	<b>2014-16</b>
World	1010.6 (18.6)	929.6 (14.9)	942.3 (14.3)	820.7 (11.8)	794.6 (10.9)
Developed Regions	20.0 (< 5.0)	21.2 (< 5.0)	15.4 (< 5.0)	15.7 (< 5.0)	14.7 (< 5.0)
Developing Regions	990.7 (23.3)	908.4 (18.2)	926.9 (17.3)	926.9 (17.3)	779.9 (12.9)
Africa	181.7 (27.6)	210.2 (25.4)	213.0 (22.7)	213.0 (22.7)	232.5 (20.0)
Asia	741.9 (23.6)	636.5 (17.6)	665.6 (17.3)	665.6 (17.3)	511.7 (12.1)
Latin America and Caribbean	66.1 (14.7)	60.4 (11.4)	47.1 (8.4)	47.1 (8.4)	34.3 (5.5)
Oceania	1.0 (15.7)	1.3 (16.5)	1.3 (15.4)	1.3 (15.4)	1.4 (14.2)

Source: The State Food Insecurity in the World 2015, FAO

Note: Numbers are in millions and the percentages are in brackets

Table 2.1 clearly depicts the status of hunger situation around the world. The FAO estimates (2015) indicate that the trend in global hunger reduction continues. About 805 million people were estimated to be chronically undernourished in 2012–14, down by more than 100 million over the last decade and by 209 million since

1990–92. However, about one in every nine people in the world still has insufficient food for an active and healthy life. The vast majority of these undernourished people live in developing countries, where an estimated 791 million were chronically hungry in 2012–14. Although developing countries also account for most of the improvements over the last two decades with an overall reduction of 203 million undernourished people since 1990–92, about one in eight people in these regions, or 13.5 percent of the overall population, still remains chronically underfed. Considerable efforts are therefore still needed to reach the Millennium Development Goal (MDG) hunger target by 2015, especially in countries that have registered inadequate progress. Progress continues in the fight against hunger, yet an unacceptably large number of people still lack the food they need for an active and healthy life. It indicates that about 795 million people in the world; just over one in nine were undernourished in 2014–16. The vast majority of the hungry people live in the developing regions, where an estimated 780 million people were undernourished in 2014–16. The Changes in large populous countries, notably China and India, play a large part in explaining the overall hunger trends in the developing regions. Rapid progress was achieved during the 1990s, when the developing regions as a whole experienced a steady decline in both the number of undernourished (The State Food Insecurity in the World 2015, FAO).

### **2.3 food security in India**

Food security is the alarming concern of all the government's and authorities all over the world. The human rights include right to food as the basic need of human being. The right to food which UN recognized in the Declaration of Human Rights in 1948 ensures all human beings free from hunger, food insecurity and malnutrition. The concept of food insecurity and its impact is also as important as food security. Famine, hunger and stunted growth are the outcomes of global food insecurity of which, women and children are the most adversely affected.

Food scarcity or famine, one of the worst outcomes of food insecurity is common in the world history. To point out some instances, "beginning with 436 B.C. when thousands of starving Romans threw themselves in the Tiber; or in Kashmir in AD 918 when one could scarcely see the water of Vitasta (Jhelum) entirely covered as the river was with corpses; or in 1933-37 in China, when we are told, four million people died in one region only; or in 1770 in India when the best estimates point to ten millions deaths; or in 1945-51 in Ireland when the potato famine killed about one fifth of the total Irish population and led to emigration of a comparable number" (Amartya Sen, 1981). The major food crisis in India was in the form of famines and droughts outburst in different parts of India. They include Bengal famine of 1770, Great famine of 1876-78, again Bengal famine of 1943, Bihar drought of 1966-67, Maharashtra drought of 1972, and West Bengal drought of 1979-80. The Bengal Famine of 1943 struck down 4 million lives approximately. There were many significant policy measures under British rule in India to reduce this evil from the society. The major reasons behind this socio-economic problems was climate change, inappropriate cropping pattern, degradation of the fertile land, inefficient administration, increased tax rates on agricultural products, monsoon based agricultural production, high population growth rate, etc. Correspondingly during 1973-74, India witnessed 54.9 percent of poverty. The impact of this worst form of poverty heavily fell on accessibility of food. These are the major reasons for emergence of the term food security.

The world food summit held in Rome, gave a new impetus to food security. The Rome Declaration on World Food Security, convened by the Food and Agricultural Organisation (FAO) defines food security as, "when all people, at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". Thus food security means that there must require the capabilities of physical and economic accessibility to households. In the matter of physical accessibility, accessibility depends on the Public Distribution Systems (PDS) and the Fair Price Shops (FPS) and the economic

accessibility depends on the purchasing power of the people. A detailed view about the food security problem will be clear only if we trace the agricultural situation in the country. Blow an attempt is made to review the progress of agriculture in the country from early periods.

### 2.3.1 Agricultural situation in India prior to independence

Agriculture in India date backs to 2000 years. The idea behind the cultivation of crops was spread across from the practice of other countries. During the Indus Valley Civilization period, new crops were cultivated. The major crops during this period were Rabi and Kharif crops. Later, with Portuguese domination, the cropping pattern witnessed a drastic change. In this phase, the cultivation of spices recorded a twofold production. During British era, the shift was in the form of export driven production strategy. The major items included were commercial crops such as opium, wheat, rice, cotton and indicia. The shifts from food crops to commercial crops result in food insecurity problems. Table 2.2 shows the agricultural growth rates of India in the pre- independent era. It clearly indicates that the production had a declining trend and yield of food grains recorded a negative growth of 0.2 percent per annum. This underlines the existence of large scale of food crisis in India.

**Table 2.2**  
**Growth rates of India – pre independence**

<b>Items</b>	<b>Area(%per annum)</b>	<b>Yield (% per annum)</b>	<b>Output (% per annum)</b>
All crops	0.4	Negative	0.4
Food grains	0.3	-0.2	0.1
Non Food grains	0.4	0.9	1.3

Source: George Blyn, “agricultural trends in India 1891-1974: output, availability and productivity”, University of Pennsylvania press, 1966

At the time of independence, majority of the people in the country faced the problem of hunger and the domestic production of food grains was not enough to feed the population. At that time, more than 80 percent of the people were in

the agricultural sector and they lived in rural areas and practiced the primitive methods for the cultivation of crops, eventually the production in was very low. So, India heavily depended on other nations to import food articles. USA provided food articles at reasonable and affordable rates under PL-480 Scheme.

Table 2.3 explains the production and yield of agricultural crops at the time of independence. The major crops cultivated during this period were rice, wheat, coarse cereals, pulses, oil seeds, sugarcane, cotton, and potato. Among these, the major food items produced were rice and coarse cereals and that of non-food grains was sugarcane. Rice production was recorded as 7.1 quintals and among non-food grains production, potato accounts for 66 quintals, much more than the production of oil seeds. Yield of cotton and sugarcane were 95 Kilograms and 34 tonnes respectively. The annual growth rates of food grains and non food grains differ in their yield and production, 3.2 percent annual growth in the case of food grains and 3.5 percent in the case of non food grains.

**Table 2.3**  
**Growth rates of production and yield of agricultural crops at the time of independence**

Items	Production	Annual growth rate	Yield	Annual growth rate
All food grains	55	3.2	5.5	1.4
Rice	24	3.5	7.1	2.1
Wheat	6	4	6.6	1.3
Coarse cereals	17	2.2	4.3	1.3
Pulses	8	1.4	4	0.2
All non-food grains	-	3.5	-	0.9
Oil seeds	5	3.3	5.2	0.1
Cotton	3	4.6	95	2
Sugarcane	50	4.3	34	1
Potato	2	4.3	66	1.6

Source: Various Annual Reports, Department of Agriculture

Notes: Production in million tonnes; Yield in quintals; Annual growth rate in percentages; Cotton (million bales of 170 kg each)

### **2.3.2 Agricultural development in India since independence**

Since independence, our nation has made much advancement in agriculture. The agriculture in India was grown only at a very negligible level at the time of independence but it has grown 2.6 percent per annum in the post-Independence era. The need for ensuring food security in India has its long history of economic imbalances created by extreme food crisis all over India. The food crisis along with massive scale of poverty pulled back the economy during 1960's and 1970's. India had its long history as an agrarian economy having 51 percent contribution to the total GDP from this sector. In Indian agriculture, the growth in area was considered as the main foundation of growth in the period of fifties and sixties and later on, the area under cultivation has declined, but at the same time, the yield has increased per hectare of land. This was considered as the main growth trend in agriculture at the time of sixties and gradually India trim down the dependence on imported food items. The agriculture in India has advancement not only in production and productivity but also structural changes occurred.

**Table 2.4**  
**Land by Use Classifications in India**

(In thousand hectares)

<b>Classification</b>	<b>1950-51</b>	<b>1960-61</b>	<b>1970-71</b>	<b>1980-81</b>	<b>1990-91</b>	<b>2000-01</b>	<b>2010-11</b>	<b>2014-15</b>
Geographical Area	328726	328726	328726	328726	328726	328726	328726	328726
Reporting area for land utilization	284315	298458	303752	304159	304862	305195	305447	305903
Forests	40482	54052	63829	67460	67805	69843	69994	70006
Area under Non-Agricultural Uses	9357	14840	16478	19596	21087	23752	24992	26513
Barren and Uncultivable Land	38160	35910	28128	19958	19389	17483	17331	17051
Permanent Pastures and other grazing lands	6675	13966	13261	11989	11404	10662	10444	10301
Land under Miscellaneous tree Crops and groves not included in net area sown	19828	4459	4367	3578	3818	3445	3391	3207
Culturable Waste land	22943	19212	17500	16744	14995	13631	13225	12657
Fallow lands Other Than Current Fallow	17445	11180	8728	9720	9662	10267	10696	10321
Current Fallows	10679	11639	10598	14826	13703	14777	14213	14267
Net Area Sown	1187465	133199	140863	140288	142999	141336	141162	141579
Total Cropped Area	131893	152772	165791	172630	185742	185340	192737	198969
Area Sown More Than Once	13147	19573	24928	32342	42743	44005	51575	57390

Source: EPW Research Foundation



Table 2.4 clearly gives an idea about the changes in land use pattern in India since 1950-51. The total geographical area of the country is 328726 thousand hectares in which 93 percent area is reporting area which means that the area for which record is available. Out of the total geographical area of 328 million hectares, the land use statistics were available for roughly 284 million hectares in 1950-51 and 305 million hectares in 2010-11. There has been noticeable rise in the forest area up to 2014-15. It increased from 40.48 million hectares in 1950-51 to 70 million hectares in 2010-11. In percentage terms, the area under forest, which constituted 14.24 per cent of the reporting area, increased to 23 per cent in 2010-11. While comparing the area under non-agricultural uses and permanent pastures and other grazing lands at the time of independence to present, there was a gradual increase in all over the years, .i.e; it increased in 2010-11. In 1950-51, the total cropped area was only 131893 thousand hectares and it gradually increased to 198969 thousand hectares in 2014-15 and also the net area sown shows the same trend. The area sown more than once was 13147 thousand hectares in 1950-51, and it slowly increased to 32342 thousand hectares in 1980-81 and after that it has increased to 57390 thousand hectares in 2014-15. So it shows that, the use of land under the categories of total cropped area and area sown more than once gradually increased after the period of economic reforms.

The major reasons for the improvement in the agricultural sector is the result of changes in cropping pattern and measures adopted by the government of India from time to time. The new phase in Indian agriculture started in mid 1960s with adoption of new agricultural strategy, generally known as green revolution approach. The new agricultural strategy relies on high-yielding varieties of crops, multiple cropping, the package approach, modern farm practices and spread of irrigation facilities. The biggest achievement of this strategy has been attainment of self sufficiency in food grains. Agrarian reforms during this period occupies back seat while research, extension, input supply, credit, marketing, price support and spread of technology were the prime concerns of policy makers (Rao, 1996). This agricultural

transformation was mainly applied in the case of two staple crops, rice and wheat. Though there was an increase in the agricultural area under cultivation and yield, a country as a whole, benefitted less out of this revolution as it was applied in specific areas. Three major components of green revolution includes, viz., continuing expansion of farming areas; double cropping and use of genetically modified seed varieties.. Before green revolution, small plots of land were cultivated as there existed subsistence farming which could meet the household food requirements since population was also comparatively small. Farmers used wooden ploughs, sickles and spade for cultivation purpose. Apart from these, farmers used bullocks, horses were used to plough, and they were not using chemical fertilizers or pesticides, rather used the natural nutrition available in the soil and hence maintained healthy output. But, with the introduction of modern agricultural practices, the whole picture changed. Modern technologies involved and less of human labour as most of the work was done by machines themselves and this led to unemployment. Earlier, most of the members in a household were engaged in the primary sector, even though the marginal productivity of labour remained very low or sometimes even negative.

Only the selected food grains such as rice, wheat, cereals and pulses are taken into account for analysis purpose as these are the prominent and are largely produced and consumed by the people in India. Initially, taking the pre reform period into account, the area, production and yield of all said food grains show a gradual increase. But percentage increase varies between different food grains. During the time period 1950-51 to 1990-91, of the all food grains, area under cultivation of wheat shows the highest increase of 59.66 per cent, while that of pulses is the least with 22.58 per cent whereas rice and cereals are 27.82 per cent and 24.17 percent respectively. In case of production and yield too, wheat holds a leading position with 88.28 per cent and 70.95 per cent. Pulses show the increase in production and yield of 41.02 per cent 23.7 per cent. Thus, the green revolution had a great impact on the food grains (especially in wheat) in

terms of production and yield. However, the increase in the area under cultivation was comparatively less and gradual decline can be seen towards reform periods.

The first wave of green revolution (beginning of green revolution 1960's) has not reflected much on the Indian agricultural sector and restrained into the northern part of India like; Punjab, Haryana etc; and also specific to wheat. So it was not able to raise the real income of the rural people in India and was also incapable to reduce the deficiency of food grains in the downtrodden areas. The impact of green revolution influenced the economy only after two decades of their implementation; that is, after 1980's. The decade of 1980's witnessed a favorable growth rate in the agricultural sector. During this period, the production of major food grains has increased in almost in all parts and helped to reduce poverty at least marginally.

**Table 2.5**  
**Per capita net availability of food grains in India**

<b>Year</b>	<b>Rice</b>	<b>Wheat</b>	<b>Other Cereals</b>	<b>Cereals</b>	<b>Pulses</b>	<b>Food grains</b>
1951-52	58.0	24.0	40	122.0	22.1	144.1
1956-57	68.7	22.5	40.7	131.9	25.7	157.6
1961-62	73.4	28.9	43.6	145.9	25.2	171.1
1966-67	59.1	34.8	37.5	131.4	17.6	149.0
1971-72	70.3	37.8	44.3	152.4	18.7	171.1
1976-77	68.5	29.1	39.2	136.8	18.5	155.3
1981-82	72.2	47.3	32.8	152.3	13.7	166.0
1985-86	68.9	50.6	32.1	151.6	13.9	165.5
1990-91	77.4	48.4	31.7	157.5	15.0	172.5

Source: EPW Research Foundation; Note: food grains in kgs. per year

Table 2.5 explains the per capita net availability of food grains in India. As per the table, the per capita availability of major food grains is shown as a rising except in the case of pulses. The per capita net availability of total food grains in India in 1951-52 was 144.1 kgs per capita per year and it has increased to 172.5 kgs

per capita per year in 1990-91. The cereals in 1951-52 shows 122 kgs per capita per year and it has increased to 157.5 kgs per capita per year in 1990-91.. While comparing the per capita net availability of cereals from 1950-51 to 1990-91, almost 23 percent increase in the cereal is noted. In the case of pulses, the per capita net availability has gradually declined after 1970's and while comparing the trends in the per capita net availability of pulses in 1990-91 from 1950-51, there had a gradual change of 47 percent throughout the years. Government has taken major steps from time to time in accordance with the changes in the production and yield of major food grains. The per capita net availability of major food grains depends upon many factors and it may vary over the years. The net availability of food grains mainly depends upon the production of major food grains in the country and the changes in population, climatic conditions etc.

### **2.3.3 Agricultural development in India since economic reforms**

India underwent a drastic change in its economic history when faced a balance of payments crisis that led to the introduction of New Economic Policy (NEP) in 1991. New Economic Policy emphasized in core areas which resulted in rapid growth of the economy since reforms. Liberalization refers to removal or reducing government restrictions on economic activities such as new foreign policy, revaluation of currency, foreign tie-ups etc. According to World Bank, “privatization is the transfer of state owned enterprises to private sector by sale of going concerns or sale of assets following their liquidation.” It simply refers to transfer of ownership or denationalization. Globalization refers to the process of reducing or eliminating government restrictions on movement of goods and services, thereby interdependence between economies. With the introduction of the reforms, domestic markets faced severe competition from its global counterparts and were unable to meet the international standards. Thus, altogether all these led to closure of many infant start-ups, followed by an extreme rise in unemployment and increased inequality. The adverse impact of globalization is still visible in the economy.

The period of 1990s was considered as a decade of a different approach in the Indian economy. It has made a complete departure of all the restrictions in the policies and introduced a new economic policy to integrate the national economy. The continuous and accelerated high growth of the Indian economy provides a large base for being the 4th largest economy of the world in terms of PPP (G.S. Bhulla, 2005). Indian economy has thrust into a new developmental phase after the 1990's. After 1980's, the green revolution strategies look into the growth in agricultural development. At the time of economic reforms, the trend of agricultural growth has shifted into more high valued agricultural commodities rather than staple food items. It has made a serious impact in the economy. The agricultural sector growth rate declined to 2.5 percent per annum on an average after the 1990s.

After the introduction of new economic policy the performance of the agricultural sector has declined and it has a complete turn down of the employment and standard of living among the common people in the country. At the time of independence, agriculture occupied the most dominant place in the Indian economy by providing livelihood to about 70 percent of population and contributing about 48.6 percent of GDP (Sharma, P.N., 2005). In 1980's the Indian agriculture has transformed in to a self-reliant economy in terms of food production. The success of green revolution increased the production and yield of food crops in the economy and it has made a high growth rate in the economy. So, the agriculture sector growth increased from deficient to self-sufficient to excessive of self-sufficient in food grain production. The opening up of the economy in 1991 and the establishment of WTO in 1995 once again changed the life of Indian farmers. After the economic reforms, the prices of basic inputs needed for the agricultural sector has increased and the opening up of the market boost the cost of agricultural inputs. But the enhanced prices in the world market may cover the gap and the Indian agriculture will sustain itself. But after the economic reforms high rise in the prices of inputs of agricultural production has made it difficult for the farmers to purchase the inputs in right amount and vulnerability of agriculture to climate changes has

increased and it is expected that agriculture sector in India will be negatively affected. (Narain, Ghosh, Sexena, Parikh, Soni, 2009). The growth rate of agriculture production is generally judged by the performance of the production of food and non food crops. Let us examine its impact on food security in our country by taking into account the variations in area, production and yield of total food grains over the period which is given in table 2.6.

**Table 2.6**  
**Area, Production and Yield of Total Food Grains**

<b>Year</b>	<b>Area</b>	<b>Production</b>	<b>Yield</b>
1991-92	121.87	168.38	1381.64
1994-95	123.86	191.50	1546.10
1997-98	123.85	192.26	1552.36
2000-01	121.05	196.81	1626.00
2003-04	123.45	213.19	1727.00
2006-07	123.71	217.28	1756.00
2009-10	121.34	218.11	1798.00
2012-13	120.78	257.13	2128.99
2014-15	-	264.38	-

Source: EPW Research Foundation;

Notes: Area in million hectares; Production in Million tonnes; Yield in Kg/hectare

Though a gradual increase in area, production and productivity can be seen till 1990s which was the effect of green revolution from 1960s; there is a sudden decline in area, production and productivity in 1991-92 and then, with the introduction of new economic policy, a rise in the figures can be seen in 1994-95. That is, in 1994-95, though the area under food production shows only a meager increase of 1.6 percent, production and yield show significant rise of 12.07 per cent and 10.63 per cent respectively compared to the figures in 1991-92. Thus, a gradual increase can be seen in area, production and yield of total food grains produced in the post reform era as compared to pre reform period and this realization was the outcome of the reforms, experiencing new technology in agriculture. At the time of initial period of economic

reforms, the area, production and yield of food crops show a declining trend, but afterwards it shown an increasing path. While comparing the trends in production in 2014-15 from the initial period of economic reforms, it gradually increased almost 100 million tonnes over the years. The yield of total food grains has gradually increased from 1381 kg/hectare in 1991-92 to 2128 kg/ hectare in 2012-13. Then we can look into the impact of economic reforms on the major food grains like; rice, wheat, cereals and pulses in table 2.7.

**Table 2.7**  
**Area, Production and Yield of Various Food Grains**

Year	Rice			Wheat			Cereals			Pulses		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y
1991-92	42.65	74.68	1751.00	23.26	55.69	2394.24	99.33	156.36	1574.15	22.54	12.02	533.00
1994-95	42.81	81.81	1911.00	25.70	65.77	2559.14	100.83	177.46	1759.93	23.03	14.04	610.00
1997-98	43.45	82.53	1900.00	26.70	66.35	2485.02	100.98	179.28	1775.47	22.87	12.98	567.00
2000-01	44.71	84.98	1900.69	25.73	69.68	2708.00	100.70	185.74	1844.47	20.35	11.08	544.47
2003-04	42.59	88.53	2077.00	26.60	72.16	2713.00	99.99	198.28	1983.07	23.46	14.91	635.00
2006-07	43.81	93.36	2130.74	27.99	75.81	2708.47	100.52	203.38	2020.41	23.19	14.20	612.00
2009-10	41.92	89.09	2125.39	28.46	80.80	2839.33	98.05	203.45	2074.94	23.28	14.66	629.66
2012-13	42.75	105.24	2461.53	30.00	93.51	3116.65	97.52	238.79	2448.65	23.26	18.34	788.59
2014-15	-	106.29	-	-	95.85	-	-	244.81	-	-	19.57	-

Source: EPW Research Foundation; Note: A-Area, P-Production, Y-Yield  
Area in Million Hectares, Production in Million Tonnes, Yield in Kg/Hectare



The staple food crops such as rice, wheat, cereals and pulses are taken into account for the analysis purpose as these are prominent and are largely produced and consumed by the people in India. The table reveals the data on area, production and yield of the said food grains over the period 1991-92 to 2014-15. Initially, taking the pre reform period into account, we can see area, production and yield of all said food grains show a gradual increase over the time period 1950-51 to 1990-91. But percentage increase varies between different food grains. During the time period 1950-51 to 1990-91, of the all food grains, area under cultivation of wheat shows the highest increase of 59.66 per cent, while that of pulses is the least of 22.58 per cent whereas rice and cereals are 27.82 per cent and 24.17 respectively. In the case of production and yield too, wheat holds a leading position with 88.28 per cent and 70.95 per cent. Pulses show the increase as the least in terms of production and yield of 41.02 per cent 23.7 per cent. In the post reform period, that is, from 1991-92 to 2014-15, wheat shows the highest increase in area and production with 22.46 per cent and 41.89 per cent respectively. Though in terms of area, cereals alone shows a negative trend with -1.85 per cent, it shows the highest increase in terms of yield with 35.71 per cent as compared with other food grains. However, there is an overall decline in the area, production and yield of all food grains in the post reform period when compared with the pre reform period. Among them, area under cultivation exhibits the least increase with rice (0.23 %), wheat (22.46%), cereals (-1.85%) and pulses (3.09%). The percentage increase in yield of wheat was 70.95 in the pre reform period, which has gone down to 23.17 percent in the post reform period.

While comparing the growth rate of the staple food crops, in the case of area, there was as a declining trend. The growth in area under cultivation of wheat decelerated to 1.39 percent annually during the period of economic reforms. In the case of rice, more area has been brought under cultivation in the post reform period and in the case of pulses, the area has drastically declined in the post reform period. The

growth in area of cereals shows a negative trend in the post reform period and the yield of staple food like rice and wheat has gradually declined as we compare the situations in the green revolution period to the reform periods. The yield of pulses has shown the same trend as we said earlier and there has been a slight difference in the case of yield of cereals. While comparing the production trends of staple food with earlier periods, it shows that, the production of rice and wheat has shown highest production in the pre reform period rather than the post reform period and in the case of pulses and cereals, it has shown a reverse trend. The pulses and cereals have shown growth in production in the post reform period compared to pre reform period because the opening up of the economy led to an increase the cost of various inputs. So the farmers are unable to afford the costs and they are not ready to cultivate the more sensitive crops like rice and wheat, because it needed more attention and more irrigation facilities.

Among the food grains, the greatest impact is seen in wheat in both the time periods. This may be due to the influence of green revolution, whose result was mainly experienced in wheat. As mentioned earlier, though there is an overall decline in the figures in the post reform period, exceptions persist; like, the yield of pulses shows an increase of 32.41 per cent in the post reform period as compared to 23.7 per cent in the pre reform period. The decline in figures in the 1990-91 to 2013-14 periods can be seen as an impact of the new economic policy. When the market became more open with the economic reforms, the area under cultivation especially under food crops started to decline. Thus, it can be stated that the new economic policy had an adverse impact on the area, production and productivity of food grains which ultimately affects the food security in our country.

**Table 2.8**  
**Per capita net availability of food grains in India**

Year	Rice	Wheat	Other Cereals	Cereals	Pulses	Food grains
1991-92	80.9	60.0	29.2	171.0	15.2	186.2
1994-95	75.7	58.2	24.5	158.4	13.6	172.0
1997-98	78.1	65.4	26.6	170.1	13.5	183.6
2000-01	74.3	58.4	21.5	154.3	11.6	165.9
2003-04	66.2	65.8	17.1	149.1	10.6	159.7
2006-07	72.3	56.3	22.1	150.7	11.8	162.5
2009-10	68.8	56.5	23.3	148.6	13.5	162.1
2012-13	69.4	57.7	21.9	149.0	15.2	164.2
2014-15	69.1	57.1	22.6	148.8	14.35	163.15

Source: EPW Research Foundation; Note: food grains in kgs. per year

The impact of green revolution is mainly seen in food grains like rice, wheat, cereals and pulses. From table 2.8, per capita net availability shows a gradual increase of the food grains in the post green revolution period. However, there is a decline towards the reform period in 1990-91. Comparing the figures of 1990-91 with that of the post reform period in 1997-98, there is an overall increase in the per capita net availability of food grains except in the case of pulses, which shows a falling trend of - 11.1 per cent. While, per capita net availability shows an increase as rice 0.89 per cent, wheat as 25.9 per cent, and cereals having 7.4 percent. Though, the overall net availability of total food grains shows a meager increase of 6.04 per cent, food grains among the increased categories, the impact on wheat is as high as 25.9 per cent. While taking into consideration food crops from 1991-92 to at present, it shown as a declining trend in the per capita net availability of food grains in India. At the time of economic reforms the per capita net availability of total food grains was 172 kgs per capita per year and it was reduced to 164 kgs per capita per year in 2012-13. While comparing the per capita net availability at present to the pre reform period, it shows that there has been a

drastic decline in the total food grains in the post reform period. In 2012-13, the per capita net availability of food grains was 164 kg per capita per year, but in 1971-72, it was 171 kg per capita per year. So while comparing the pre reform period and post reform period, it can be seen that the per capita net availability declined in the post reform period and it leads to severe food crisis in India.

### **2.3.4 Recent trends in Indian agriculture and its asseveration to food security**

Agriculture plays a vital role in India's economy. 54.6% of the population is engaged in agriculture and allied activities (census 2011) and it contributes 17.4% to the country's Gross Value Added (current price 2014-15, 2011-12 series) (Annual report 2015-16). Agriculture in India is more commercialized in the present generation rather than mere subsistence in the primitive culture of life. India has been experiencing the rise in the production of food grains particularly after the introduction of green revolution and the average annual growth rate of 2.08 per cent was recorded during 1970s. Annual growth rate of 3.5 per cent in food grains in 1980s is the distinguishing feature of the green revolution that facilitated India to become self sufficient in food grains. The decade of 1990s could not maintain this tempo and annual growth rate has fallen to 1.7 per cent which is just equal to annual population growth. Total production of food grains increased from 176.39 million tonnes in 1990-91 to 264.7 million tonnes in 2013-14. The demand for food grains is likely to increase in the future and at least the country should maintain 4 percent growth rate in the future which will be able to provide the food items in the economy and rest will be exported to other countries. Hence we shall look into the production side of the major food grain crops after the period of economic reforms to the present day. The trends in the major food grain crops are shown in table 2.9.

**Table 2.9****All India Production of major food grain crops (Thousand Tones)**

<b>Year</b>	<b>Rice</b>	<b>Wheat</b>	<b>Coarse Cereals</b>	<b>Pulses</b>	<b>Food grains</b>
1994-95	81814.0	65767.4	29876.2	14037.6	191495.2
1996-97	81733.7	69350.2	34107.9	14147.7	199339.5
1998-99	86076.7	71287.5	31335.4	14907.1	203606.7
2000-01	84976.6	69680.8	31081.0	11075.4	196813.8
2002-03	71820.2	65760.8	26065.4	11125.0	174771.4
2004-05	83131.7	68636.9	33464.7	13129.5	198362.8
2006-07	93355.3	75806.7	33922.6	14197.5	217282.1
2008-09	99182.5	80679.4	40037.9	14566.4	234466.2
2010-11	95979.8	86874.0	43397.1	18240.9	244491.8
2011-12	104322.0	93903.6	42008.5	17207.9	257441.9
2012-13	104398.7	92458.2	40058.4	18446.0	255361.2
2014-15	106539.9	95907.1	43054.7	19269.4	264771.1

Source: Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India

Data were taken for the period 1994-95 to 2014-15 on rice, wheat, coarse cereals and pulses in India. In 1994-95, it was seen that the production of crops are increasing throughout up to 2000-01 and there has been a declining trend in the staple crops in 2002-03 because of the severe drought in India. After 2002-03, the food grains are also in an increasing path. The total food grain production recorded very high in 2013-14 as 264771.1 thousand tones. In the same year, all the crops are showing an upward trend. Comparing to the earlier years, it shows that all India production trends are gradually increasing all the periods except in 2002-03. Food grains production increased from 198.40 million tons in 2004-05 to an all-time high of 265.04 million tonnes in 2013-14, which was a good monsoon year. In 2014-15, however, while the pre monsoon rains were 99 per cent of the long period average, both monsoon and post-

monsoon rains were deficient, and deficient rainfall affected the production of both kharif and rabi crops during the year (state of Indian Agriculture 2015-16). The state wise trend in production of food crops are shown in table 2.10.

The total production of rice in the country is estimated at 104.80 million tonnes which is lower by 1.85 million tonnes than the production during 2013- 14. Production of wheat is estimated at 88.94 million tones which is lower than its production of 95.85 million tonnes during 2013-14. The production of Coarse Cereals is estimated at 41.75 million tonnes which is lower than the production of Coarse Cereals during 2013-14. Total food grains production during 2014-15 is estimated at 252.68 million tones which are lower by 12.36 million tonnes than the record production of 265.04 million tonnes of food grains achieved during 2013-14. Total production of pulses estimated at 17.20 million tonnes is also lower by 2.05 million tonnes than its production levels during 2013-14.(Annual report 2015-16).The major food production is concentrated in the northern region of India and most of the production of food grains is coming from the northern parts. The food crops can be dispersed through the distribution channels, but the production is concentrated in the major states like, Uttar Pradesh, Punjab, Bihar, West Bengal etc. Uttar Pradesh is the largest total food grain production state in India and it produces very high quantum of food. In 1994-95, the total food grain production in Uttar Pradesh was around 39207 thousand tonnes, while, in 2014-15 it was almost 50047 thousand tonnes and the state feeds almost total population in the country. Uttar Pradesh and West Bengal are considered as the largest rice and wheat producers in the country respectively. The production of total food grains in West Bengal increased from 13278 thousand tonnes in 1994-95 to 17050 thousand tonnes in 2014-15.

**Table 2.10****State-wise production of food grains in India**

(Thousand Tonnes)

<b>State/Year</b>	<b>1994-95</b>	<b>1996-97</b>	<b>1998-99</b>	<b>2000-01</b>	<b>2002-03</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>
<b>AP</b>	11783.6	13675.2	14905	16029.2	10653.6	13396	16229	20421	20182.8	17925.7	20098.1
<b>AR</b>	193.2	205.8	187.9	215.3	242.3	226.9	245.7	255.8	-	-	-
<b>AS</b>	3489.2	3532.1	3434.0	4166.5	3894.0	3618.2	3060.0	4143.0	4896.0	4757.0	4939.0
<b>BR</b>	12971.0	14417.6	13625.9	12056.3	11084.7	7704.4	11098.6	12220.7	9884.0	15623.7	13153.5
<b>CG</b>	-	-	-	2901.3	3274.7	5023.0	5805.0	5167.3	7026.8	7631.6	7583.0
<b>GA</b>	140.7	159.8	164.4	153.0	143.4	155.7	147.4	134.3	-		-
<b>GJ</b>	5247.0	5208.6	5566.7	2539.0	3566.3	5257.5	6499.0	6481.0	7852.3	7324.0	8214.4
<b>HR</b>	10993.6	11448.0	12123.2	13294.4	12328.9	13109.0	14763.0	15613.7	16040.9	16220.0	16974.0
<b>HP</b>	1406.5	1288.5	1490.7	1112.2	1122.9	1612.3	1382.2	1401.2	1531.1	1392.1	1418.9
<b>JK</b>	1443.0	1331.3	1519.6	1114.5	1322.4	1499.0	1572.7	1721.3	1371.5	1511.9	1585.8
<b>JH</b>	-	-	-	2011.0	1893.2	2311.1	3686.8	4188.7	1823.6	4298.7	4193.0
<b>KA</b>	8106.6	9212.8	9996.6	10986.0	6664.6	10495.0	9599.0	11275.0	13290.0	10925.2	12173.0
<b>KL</b>	999.9	852.0	754.5	765.3	699.7	670.9	640.5	598.3	548.7	532.9	513.5
<b>MP</b>	19428.3	19487.8	19501.2	10185.4	10748.8	14104.8	13747.0	13914.6	14957.0	23416.8	24235.4
<b>MH</b>	11524.8	14602.4	12752.8	10134.9	10834.1	10540.7	12645.1	11427.6	15066.0	10689.0	13916.2
<b>MN</b>	488.7	390.7	392.3	395.8	343.7	447.8	398.5	415	-	-	-
<b>ML</b>	143.0	178.3	187.8	216.0	227.1	225.2	231.5	236.3	-	-	-

<b>MZ</b>	124.8	133.8	135.0	124.0	129.1	124.6	56.3	58.9	-	-	-
<b>NL</b>	219.5	212.3	282.0	322.7	388.0	403.5	436.2	514.2	-	-	-
<b>OR</b>	6898.8	4831.4	5793.1	4984.2	3573.7	6889.7	7344.7	7399.1	7641.0	8352.7	8334.2
<b>PB</b>	21816.8	21553.3	22906.9	25324.5	23491.2	25670.7	25313.1	27329.8	27224.0	28071.3	28902.0
<b>RJ</b>	11710.4	12821.3	12944.5	10040.6	7536.0	12150.8	14208.8	16680.2	18691.9	18034.1	18302.4
<b>SK</b>	105.4	105.8	90.7	103.2	96.6	103.9	100.3	107.5	-	-	-
<b>TN</b>	9088.0	6930.0	9418.7	8616.9	4442.1	6175.8	8263.0	7102.3	8313.6	6294.1	8494.2
<b>TR</b>	426.4	556.1	499.4	523.1	611.8	556.4	630.0	634.7	-	-	-
<b>UP</b>	39207.7	42385.1	40417.2	42714.9	38141.6	37836.3	41214.5	46729.3	47243.7	50838.4	50047.1
<b>UK</b>	-	-	-	1726.4	1559.1	1761.0	1735.0	1765.0	1818.0	1803.4	1779.0
<b>WB</b>	13278.6	13756.3	14367.2	13815.0	15522.1	16055.4	15974.5	16295.6	13743.8	16511.2	17050.9

Source: Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India

Note: AP-Andhra Pradesh; AR-Arunachal Pradesh; AS-Assam; BR-Bihar; CG-Chhattisgarh; GA-Goa; GJ-Gujarat; HR-Haryana; HP-Himachal Pradesh; JK-Jammu Kashmir; JH-Jharkhand; KA-Karnataka; KL-Kerala; MP-Madhya Pradesh; MH-Maharashtra; MN-Manipur; ML-Meghalaya; MZ-Mizoram; NL-Nagaland; OR-Orissa; PB-Punjab; RJ-Rajasthan; SK-Sikkim; TN-Tamil Nadu; TR-Tripura; UP-Uttar Pradesh; UK-Uttarakhand; WB-West Bengal



The state wise trend in the production of rice is shown in table 2.11. The major rice producing states in India are Andhra Pradesh, Punjab, Uttar Pradesh and West Bengal and produces major share of the rice production in India. These states have to feed the whole population in the country especially in the eastern and Southern parts of India, because rice is the main staple food in the eastern and southern parts of India. Rice is cultivated widely across the nation in more than 20 states and in an area of over 400 lakh hectares. Out of the states top ten rice producing states account for more than 80 percent of the total rice production in India. The top ten states are, West Bengal, Uttar Pradesh, Andhra Pradesh, Punjab, Tamil Nadu, Bihar, Chhattisgarh, Orissa, Assam, and Karnataka. Among these the top three positions are occupied by the West Bengal, Uttar Pradesh and Andhra Pradesh in 2014-15.

At present these states produce the major share in the total production. The contribution by the state of West Bengal has almost crossed 146.05 lakh tonnes; it occupies the first position in the case of rice production in the country. Uttar Pradesh occupies the second position and it produces more than 140.22 lakh tonnes of rice in the country and the third position goes to Andhra Pradesh with 128.95 lakh tonnes of rice in the country. These three major states are feeding the entire population in the country. In 1994-95 the production trend in West Bengal has almost 12235 thousand tonnes and it increased to 15313 thousand tonnes in 2014-15. In the case of Uttar Pradesh and Andhra Pradesh, it shows that in 2014-15 it was 14628 thousand tonnes and 13027 thousand tonnes respectively, while in 1994-95 it was 10365 thousand tonnes and 9276 thousand tonnes respectively in the country. The very least rice producing states are Sikkim, Arunachal Pradesh and Himachal Pradesh. In the case of Kerala, it produces only very small part and compared to the production trends in the earlier years, at present the production trend has gone decreasing. In 1994-95, the production of rice in Kerala was 975 thousand tonnes and in 2014-15 it was reduced to 509 thousand tonnes only.

**Table 2.11****State-wise production of Rice in India (Thousand Tonnes)**

<b>State/Year</b>	<b>1994-95</b>	<b>1996-97</b>	<b>1998-99</b>	<b>2000-01</b>	<b>2002-03</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>
<b>AP</b>	9276.7	10686.0	11878.0	12458.0	7327.0	9601.0	11872.0	14241.0	14385.0	10914.6	13027.1
<b>AR</b>	105.8	129.4	114.1	132.7	152.5	135.0	146.2	163.9	-	-	-
<b>AS</b>	3309.1	3328.2	3254.8	3998.5	3738.0	3470.7	2916.0	4008.5	4752.0	4562.0	4778.0
<b>BR</b>	6297.9	7280.7	6769.4	5442.6	5085.5	2472.2	4989.3	5590.3	3320.2	7336.0	5507.9
<b>CG</b>	-	-	-	2369.3	2634.9	4383.3	5041.4	4391.8	6159.0	6608.8	6716.4
<b>GA</b>	133.0	148.0	151.2	142.1	134.8	145.2	130.3	123.3	-	-	-
<b>GJ</b>	942.1	946.0	1015.8	472.3	541.7	1238.2	1390.0	1303.0	1523.0	1503.0	1616.0
<b>HR</b>	2227.0	2463.0	2425.0	2695.0	2468.0	3023.0	3371.0	3298.0	3472.0	3976.0	3998.0
<b>HP</b>	112.2	108.6	117.8	124.9	85.7	122.0	123.5	118.3	131.2	134.3	132.5
<b>JK</b>	584.7	431.4	589.1	414.9	421.0	492.2	554.0	563.1	507.7	545.6	556.5
<b>JH</b>	-	-	-	1644.7	1381.0	1677.0	2967.8	3420.2	1136.9	3026.7	2741.1
<b>KA</b>	3167.5	3211.6	3656.9	3846.7	2390.1	3547.0	3446.0	3802.0	4047.0	3283.0	3758.0
<b>KL</b>	975.1	831.6	726.7	751.3	688.9	667.1	631.0	590.3	542.9	531.0	509.2
<b>MP</b>	6463.0	5939.1	5060.6	982.1	1031.8	1169.0	1368.4	1559.7	1772.1	2775.0	2780.7
<b>MH</b>	2397.1	2614.4	2467.6	1929.2	1854.0	2164.0	2569.0	2284.0	2669.0	3042.0	2946.0
<b>MN</b>	478.3	367.3	382.2	381.7	332.6	435.9	386.1	397	-	-	-
<b>ML</b>	111.5	141.1	149.7	179.0	190.9	193.7	200.2	203.9	-	-	-

<b>MZ</b>	100.2	111.2	109.2	103.7	109.2	104.1	29.5	46.0	-	-	-
<b>NL</b>	174.0	153.0	209.6	230.0	225.0	259.8	263.5	345.1	-	-	-
<b>OR</b>	6353.2	4438.4	5391.5	4614.0	3276.7	6466.0	6824.7	6812.7	6558.2	7639.5	7583.6
<b>PB</b>	7703.0	7334.0	7940.0	9154.0	8880.0	10437.0	10138.0	11000.0	10837.0	11374.0	11267.0
<b>RJ</b>	173.2	174.2	205.5	155.7	67.9	150.4	169.8	241.1	265.6	222.5	312.6
<b>SK</b>	20.7	22.1	22.0	21.4	21.2	21.6	21.5	21.7	-	-	-
<b>TN</b>	7562.8	5805.3	8141.4	7366.3	3577.1	5062.2	6610.6	5182.7	6139.4	4399.5	5536.9
<b>TR</b>	413.9	544.8	491.5	513.4	602.3	545.1	620.5	627.1	-	-	-
<b>UP</b>	10365.0	11770.7	11386.6	11679.2	9594.9	9555.6	11124.0	13097.0	12014.1	14413.0	14628.0
<b>UK</b>	-	-	-	621.5	483.0	572.0	556.0	582.0	545.0	581.0	579.0
<b>WB</b>	12235.9	12636.8	13316.5	12428.1	14389.2	14884.8	14745.9	15037.2	12332.7	14961.7	15313.7

Source: Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India

Note: AP-Andhra Pradesh; AR-Arunachal Pradesh; AS-Assam; BR-Bihar; CG-Chhattisgarh; GA-Goa; GJ-Gujarat; HR-Haryana; HP-Himachal Pradesh; JK-Jammu Kashmir; JH-Jharkhand; KA-Karnataka; KL-Kerala; MP-Madhya Pradesh; MH-Maharashtra; MN-Manipur; ML-Meghalaya; MZ-Mizoram; NL-Nagaland; OR-Orissa; PB-Punjab; RJ-Rajasthan; SK-Sikkim; TN-Tamil Nadu; TR-Tripura; UP-Uttar Pradesh; UK-Uttarakhand; WB-West Bengal

The major wheat producing states in India are Uttar Pradesh, Punjab, Madhya Pradesh and Haryana and produce major share of the Wheat production in the country. Wheat cultivation is traditionally concentrated in the northern region of India. Uttar Pradesh was almost producing 36 percent of the production of wheat in the country. India occupied the second rank for the highest production of wheat with total production of 88.94 million tons in 2014-15. Wheat is grown widely crosswise the nation in more than 10 states and in an area of over 280 lakh hectares. Out of the state's top ten wheat producing states account for more than 70 percent of the total wheat production in India. The top ten states are accordingly Uttar Pradesh, Punjab, Madhya Pradesh, Haryana, Rajasthan, Bihar, Gujarat, Maharashtra, West Bengal and Himachal Pradesh. Among these, the top three positions are occupied by Uttar Pradesh, Punjab, and Madhya Pradesh in 2014-15 (Table 2.12).

The trend in the production of wheat shows the production and contributions of wheat in different states. Uttar Pradesh, Punjab and Madhya Pradesh occupied the first three positions in wheat production in the country and it produces more than 25220 thousand tonnes, 15783 thousand tonnes, 14182 thousand tonnes of wheat respectively. These three major states are feeding the entire population in the country in case of wheat. In 1994-95 the production in Uttar Pradesh was almost 22560 thousand tonnes and it increased to 30246 thousand tonnes in 2014-15. In the case of Punjab and Madhya Pradesh, in 2014-15 it was 17035 thousand tonnes and 13927 thousand tonnes respectively, while in 1994-95 it was 13542 thousand tonnes and 7278 thousand tonnes respectively in the country. Andhra Pradesh, Arunachal Pradesh and Nagaland are the states which produce only marginal quantity of wheat production among the states.

**Table 2.12****State-wise production of Wheat in India (Thousand Tonnes)**

<b>State/Year</b>	<b>1994-95</b>	<b>1996-97</b>	<b>1998-99</b>	<b>2000-01</b>	<b>2002-03</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>
<b>AP</b>	8.4	9.0	6.0	8.0	14.0	5.0	9.0	16.0	10.0	7.0	7.0
<b>AR</b>	7.6	6.1	4.4	6.2	6.3	8.7	6.3	5.2	-	-	-
<b>AS</b>	103.6	117.1	90.5	85.7	78.0	68.1	67.0	54.6	64.0	57.0	32.0
<b>BR</b>	4275.0	4560.7	4403.7	4438.0	4040.6	3263.4	3911.4	4410.0	4670.0	5375.1	5081.0
<b>CG</b>	-	-	-	79.5	98.6	82.4	91.7	92.5	126.8	141.3	134.0
<b>GA</b>	-	-	-	-	-	-	-	-	-	-	-
<b>GJ</b>	1962.4	1336.0	1702.6	649.0	856.6	1805.5	3000.0	2593.0	3854.1	3135.0	3651.4
<b>HR</b>	7303.0	7826.0	8568.0	9669.0	9188.0	9058.0	10055.0	10808.2	11040.9	11117.0	11800.0
<b>HP</b>	599.3	531.0	641.4	251.3	495.6	684.0	501.6	547.3	670.0	543.5	538.5
<b>JK</b>	349.1	412.6	368.4	148.7	401.9	474.4	492.2	483.6	289.9	415.8	464.6
<b>JH</b>	-	-	-	103.6	104.0	150.0	128.9	153.9	151.4	267.4	356.3
<b>KA</b>	171.8	190.3	219.4	244.0	147.7	179.0	205.0	247.0	245.0	172.0	230.0
<b>KL</b>	-	-	-	-	-	-	-	-	-	-	-
<b>MP</b>	7278.6	7793.2	8333.4	4869.4	4923.4	7176.6	7325.9	6521.9	7627.1	13133.4	13927.7
<b>MH</b>	1111.2	1167.0	1308.5	948.0	984.0	1016.0	1631.1	1516.0	2292.0	875.0	1602.0
<b>MN</b>	-	-	-	-	-	-	-	-	-	-	-
<b>ML</b>	6.4	6.9	7.0	6.9	4.7	1.6	1.2	0.7	-	-	-

<b>MZ</b>	-	-	-	-	-	-	-	-	-	-	-
<b>NL</b>	0.6	2.5	9.4	10.0	17.0	13.0	1.3	2.1	-	-	-
<b>OR</b>	6.7	6.6	4.4	12.9	5.8	5.0	5.8	7.4	4.7	2.1	1.1
<b>PB</b>	13542.0	13672.0	14460.0	15551.0	14175.0	14698.0	14596.0	15733.0	15828.6	16106.1	17035.3
<b>RJ</b>	5612.7	6782.0	6879.8	5547.1	4878.0	5706.6	7055.8	7287.0	7214.5	8953.5	8921.8
<b>SK</b>	14.9	14.8	6.4	10.1	8.9	8.3	9.0	7.8	-	-	-
<b>TN</b>	0.1	-	-	0.1	-	-	-	-	-	-	-
<b>TR</b>	4.9	3.9	2.1	2.2	1.8	2.8	1.8	1.2	-	-	-
<b>UP</b>	22560.2	24049.6	23465.2	25168.3	23612.4	22513.9	25031.0	28554.0	30001.0	30301.9	30246.3
<b>UK</b>	-	-	-	714.6	750.0	803.0	801.0	797.0	887.0	838.0	844.0
<b>WB</b>	744.5	839.0	778.1	1058.6	887.4	841.5	799.9	764.5	842.0	907.0	947.0

Source: Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India

Note: AP-Andhra Pradesh; AR-Arunachal Pradesh; AS-Assam; BR-Bihar; CG-Chhattisgarh; GA-Goa; GJ-Gujarat; HR-Haryana; HP-Himachal Pradesh; JK-Jammu Kashmir; JH-Jharkhand; KA-Karnataka; KL-Kerala; MP-Madhya Pradesh; MH-Maharashtra; MN-Manipur; ML-Meghalaya; MZ-Mizoram; NL-Nagaland; OR-Orissa; PB-Punjab; RJ-Rajasthan; SK-Sikkim; TN-Tamil Nadu; TR-Tripura; UP-Uttar Pradesh; UK-Uttarakhand; WB-West Bengal

Coarse cereals is grown widely crosswise the nation in more than ten states and in an area of over 400 lakh hectares. Out of the state's top ten coarse cereals producing states account for more than 60 percent of the total coarse cereals production in India. The top ten states are, Rajasthan, Karnataka, Andhra Pradesh (some parts of Telengana), Maharashtra, Uttar Pradesh, Madhya Pradesh, Tamil Nadu, Bihar, Gujarat and Haryana. Table 2.13 explains the state wise coarse cereal production in India.

Rajasthan, Karnataka, Andhra Pradesh (some parts of Telengana), and Maharashtra are the major coarse cereals producing states in India and the contribution has almost crossed 7566 thousand tonnes, 6681 thousand tonnes and 4716 thousand tonnes respectively. These major states are feeding the entire population in the country. In 1994-95 the production trend in Rajasthan has almost 3959 thousand tonnes and it increased to 6600 thousand tonnes in 2014-15. In the case of Karnataka and Andhra Pradesh, in 2014-15 it was 6720 thousand tonnes and 5511 thousand tonnes respectively, while in 1994-95 it was 4146 thousand tonnes and 1826 thousand tonnes respectively in the country. The trend in the production of coarse cereals shows that, the production concentrates only in few states and the remaining states are contributing very less.

**Table 2.13****State-wise production of Coarse Cereals in India (Thousand Tonnes)**

<b>State/Year</b>	<b>1994-95</b>	<b>1996-97</b>	<b>1998-99</b>	<b>2000-01</b>	<b>2002-03</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>
<b>AP</b>	1826.0	2142.2	2143.5	2509.0	2251.0	2771.0	3001.0	4716.0	4348.8	5440.8	5511.9
<b>AR</b>	74.2	63.6	62.6	69.6	75.8	76.4	84.9	77.7	-	-	-
<b>AS</b>	17.1	18.4	19.5	20.0	18.0	18.0	18.0	15.4	17.0	17.0	19.0
<b>BR</b>	1608.5	1830.8	1660.5	1555.0	1397.7	1501.9	1759.7	1751.3	1338.2	2371.2	2049.6
<b>CG</b>	-	-	-	185.0	175.5	189.5	178.3	184.4	205.4	244.7	261.8
<b>GA</b>	2.9	3.9	3.7	1.3	1.1	1.1	0.8	0.8	-	-	-
<b>GJ</b>	1823.9	2262.8	2214.8	1226.6	1840.8	1734.5	1516.0	1976.0	1755.2	2073.0	2208.0
<b>HR</b>	970.0	814.0	777.0	831.0	590.0	882.0	1197.0	1329.4	1369.0	1003.0	1051.0
<b>HP</b>	682.1	637.5	718.6	716.3	524.9	788.2	728.2	712.1	713.5	667.7	708.8
<b>JK</b>	486.3	470.3	543.9	538.0	485.5	517.3	512.3	660.4	550.7	536.0	552.2
<b>JH</b>	-	-	-	166.7	274.7	324.1	332.0	333.9	268.2	409.7	525.4
<b>KA</b>	4146.6	5088.7	5373.4	5939.1	3433.2	5977.0	5055.0	6254.0	7501.0	6151.6	6720.0
<b>KL</b>	6.0	5.8	4.9	3.4	4.0	0.9	1.1	1.7	0.7	0.3	0.3
<b>MP</b>	2032.9	2211.5	2488.4	2058.5	2418.1	2330.0	1849.6	2149.9	2166.3	2527.2	2433.4
<b>MH</b>	6318.6	8784.2	6721.8	5620.3	5938.0	5696.7	6141.0	5971.6	6959.0	4359.0	6248.2
<b>MN</b>	10.4	23.4	10.1	10.9	8.5	8.9	7.9	11.5	-	-	-
<b>ML</b>	22.7	27.8	27.6	26.6	28.2	26.3	27.2	27.8	-	-	-



<b>MZ</b>	14.7	15.8	16.5	16.4	14.9	15.7	21.0	9.3	-	-	-
<b>NL</b>	37.0	43.2	50.5	61.6	118.0	105.5	126.4	127.3	-	-	-
<b>OR</b>	128.9	160.5	147.9	144.6	96.8	169.1	162.4	191.7	364.0	287.2	325.7
<b>PB</b>	481.3	467.2	456.2	575.1	402.3	504.0	552.0	575.1	540.0	526.0	558.8
<b>RJ</b>	3959.0	4020.5	3414.8	3606.3	2105.6	4956.4	5501.9	7325.7	7995.5	6913.1	6600.5
<b>SK</b>	60.9	62.9	56.7	66.5	59.9	67.4	63.7	66.2	-	-	-
<b>TN</b>	1185.1	891.9	973.0	937.8	682.8	868.0	1361.9	1755.1	1878.2	1645.4	2522.0
<b>TR</b>	1.8	1.8	1.7	1.6	2.2	3.0	2.4	2.0	-	-	-
<b>UP</b>	3803.3	3939.4	3241.9	3707.1	2732.3	3391.8	3084.4	3080.2	3216.6	3689.5	3464.4
<b>UK</b>	-	-	-	368.5	297.0	358.0	344.0	347.0	334.0	336.0	299.0
<b>WB</b>	163.6	109.0	146.5	109.0	77.9	162.0	274.7	365.4	407.9	434.6	540.3

Source: Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India

Note: AP-Andhra Pradesh; AR-Arunachal Pradesh; AS-Assam; BR-Bihar; CG-Chhattisgarh; GA-Goa; GJ-Gujarat; HR-Haryana; HP-Himachal Pradesh; JK-Jammu Kashmir; JH-Jharkhand; KA-Karnataka; KL-Kerala; MP-Madhya Pradesh; MH-Maharashtra; MN-Manipur; ML-Meghalaya; MZ-Mizoram; NL-Nagaland; OR-Orissa; PB-Punjab; RJ-Rajasthan; SK-Sikkim; TN-Tamil Nadu; TR-Tripura; UP-Uttar Pradesh; UK-Uttarakhand; WB-West Bengal

The state wise trend is discussed in table 2.14. The major pulses producing states in India are Madhya Pradesh, Uttar Pradesh and Maharashtra, it produces major share of the pulse production in India. Pulse is grown broadly crosswise the nation in more than six states and in an area of over almost 100 lakh hectares. Out of the state's top six pulses producing states account for more than 50 percent of the total pulse production in India. The top 6 states are, Madhya Pradesh, Uttar Pradesh, Maharashtra, Rajasthan and Andhra Pradesh. Among these, the top three positions are occupied by the Madhya Pradesh, Uttar Pradesh and Maharashtra in 2014-15.

The contribution by the state of Madhya Pradesh has almost crossed 23 percent of the total pulse production in the country. It occupies the first position in the case of pulse production in the country. Uttar Pradesh occupies the second position and it produces more than 18 percent of pulse production in the country and the third position is occupied Maharashtra with 14 percent of production of pulse in the country. These three major states are feeding the entire population in the country. India is one of the main countries in the production of pulses, but India has to import 2 to 3 million tonnes of pulses annually for their domestic requirements. In 1994-95 the production trend in Madhya Pradesh was almost 3653 thousand tonnes and it increased to 5093 thousand tonnes in 2014-15. In the case of Uttar Pradesh and Maharashtra, in 2014-15 it was 1708 thousand tonnes and 3120 thousand tonnes respectively, while in 1994-95 it was 2479 thousand tonnes and 1697 thousand tonnes respectively in the country. Least pulse producing states are Manipur, Meghalaya, Goa and Arunachal Pradesh and they produce only small part of their area. In 1994-95, the production of pulse in Kerala was 18 thousand tonnes and in 2014-15 it was reduced to only 4 thousand tonnes only.

**Table 2.14****State-wise production of Pulses in India (Thousand Tonnes)**

<b>State/Year</b>	<b>1994-95</b>	<b>1996-97</b>	<b>1998-99</b>	<b>2000-01</b>	<b>2002-03</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>
<b>AP</b>	672.5	838.0	827.4	1054.2	1061.6	1019.0	1347.0	1448.0	1439.0	1563.2	1552.0
<b>AR</b>	5.1	6.7	6.8	6.8	7.7	6.8	8.3	9.0	-	-	-
<b>AS</b>	59.4	68.4	69.2	62.3	60.0	61.4	59.0	64.5	63.0	121.0	110.0
<b>BR</b>	789.6	745.4	792.3	620.7	560.9	466.9	438.2	469.1	555.6	541.4	515.0
<b>CG</b>	-	-	-	267.5	365.7	367.8	493.6	498.6	535.6	636.8	470.8
<b>GA</b>	4.8	7.9	9.5	9.6	7.5	9.4	16.3	10.2	-	-	-
<b>GJ</b>	518.6	663.8	633.5	190.7	327.2	479.3	593.0	609.0	720.0	613.0	739.0
<b>HR</b>	493.6	345.0	353.2	99.4	82.9	146.0	140.0	178.1	159.0	124.0	125.0
<b>HP</b>	12.9	11.4	12.9	19.7	16.7	18.1	28.9	23.5	16.5	46.6	39.1
<b>JK</b>	22.9	17.0	18.2	12.9	14.0	15.1	14.2	14.2	23.2	14.4	12.5
<b>JH</b>	-	-	-	96.0	133.5	160.0	258.1	280.7	267.1	594.9	570.3
<b>KA</b>	620.7	722.2	746.9	956.2	693.6	792.0	893.0	972.0	1497.0	1318.6	1465.0
<b>KL</b>	18.8	14.6	22.9	10.6	6.8	2.9	8.4	6.3	5.1	1.6	4.0
<b>MP</b>	3653.8	3544.0	3618.8	2275.4	2375.5	3429.2	3203.1	3683.1	3391.4	4981.3	5093.6
<b>MH</b>	1697.9	2036.8	2254.9	1637.4	2058.1	1664.0	2304.0	1656.0	3146.0	2413.0	3120.0
<b>MN</b>	-	-	-	3.2	2.6	3	4.5	6.5	-	-	-
<b>ML</b>	2.4	2.5	3.5	3.5	3.3	3.6	2.9	3.9	-	-	-

<b>MZ</b>	9.9	6.8	9.3	3.9	5.0	4.8	5.8	3.6	-	-	-
<b>NL</b>	7.9	13.6	12.5	21.1	28.0	25.2	45.0	39.7	-	-	-
<b>OR</b>	410.0	225.9	249.3	212.7	194.4	249.6	351.8	387.3	414.1	423.8	423.7
<b>PB</b>	90.5	80.1	50.7	44.4	33.9	31.7	27.1	21.7	18.4	65.2	40.9
<b>RJ</b>	1965.5	1844.6	2444.4	731.5	484.5	1337.4	1481.3	1826.4	3216.4	1945.0	2467.7
<b>SK</b>	8.9	6.0	5.6	5.2	6.6	6.6	6.1	11.8	-	-	-
<b>TN</b>	340.0	232.8	304.3	312.7	182.2	245.6	290.5	164.5	296.0	249.1	435.3
<b>TR</b>	5.8	5.6	4.1	5.9	5.5	5.5	5.3	4.4	-	-	-
<b>UP</b>	2479.2	2625.4	2323.5	2160.3	2202.0	2375.0	1975.1	1998.1	2012.0	2434.0	1708.4
<b>UK</b>	-	-	-	21.8	29.1	28.0	34.0	39.0	52.0	48.4	57.0
<b>WB</b>	134.6	171.5	126.1	219.3	167.6	167.1	154.0	128.5	161.2	207.9	249.8

Source: Agricultural Statistics at a Glance, Ministry of Agriculture, Government of India

Note: AP-Andhra Pradesh; AR-Arunachal Pradesh; AS-Assam; BR-Bihar; CG-Chhattisgarh; GA-Goa; GJ-Gujarat; HR-Haryana; HP-Himachal Pradesh; JK-Jammu Kashmir; JH-Jharkhand; KA-Karnataka; KL-Kerala; MP-Madhya Pradesh; MH-Maharashtra; MN-Manipur; ML-Meghalaya; MZ-Mizoram; NL-Nagaland; OR-Orissa; PB-Punjab; RJ-Rajasthan; SK-Sikkim; TN-Tamil Nadu; TR-Tripura; UP-Uttar Pradesh; UK-Uttarakhand; WB-West Bengal

In the above pages we have discussed the agricultural situation in India during the days of pre independence, post independence and post reforms. This discussion serves as a prelude to examine the food situation in the country. Food crisis is directly related to trends in area, production and yield of food crops. In continuation of this we move to review the food crisis in the country.

### **2.3.5 Recent Food Crisis in India**

India was experiencing severe food crisis after the reform period due to the stagnant production of food grains and gradual increase in the population and there has been increasing the gap between demand and supply of food grains. After the economic reforms, there was a decline in the investment in the agricultural sector and there has been a rise in the price of food grain stocks. India's supply side was also shrinking at this time period in whole, but the demand was increasing.

India stands at a disadvantageous position in the case of food grains output. Wheat production stood at 72.8 million MT in 2002, which marginally increased to 74 million tones in the year 2007- 2008 Rice production was 93.3 million MT during 2002 and in the year 2007-08 it stood at 90 million MT. Meanwhile, population has increased by nearly 88 million during the said period. Hence, there is an increasing need for imports. This in turn would lead to increase in global prices. As soon as India bought 795,000 MT of wheat in August 2008, at a record price of US \$ 389.5, wheat futures in Europe went up by 70% because of expectations of more orders (Woolverton, 2009).

State-wise procurement of wheat and rice are showing declining trends. In the year 2005- 06 the total procurement was 147.9 lakh tones and by the end of 2007-08it touched a level of 113 lakh tones. In the year 2005-06 the total rice procurement was 276.6 lakh tones and the same declined to 250.8 lakh tones during

2007-08 (Food crisis in India-Review Article). The state wise trend also shows an indication of the decline in procurement of wheat and rice. In the case of wheat only Haryana has procured more in 2006- 2007 than 2005-2006. There are only three states namely Andhra Pradesh, Orissa and Tamil Nadu where the procurement of rice is much more in 2006-2007 over 2005-2006. In 1976-77, at the stature of the green revolution rapture, per capita availability of cereals and pulses had gone up to 136 and 18 kg per capita per day. In 2012-13 pulses was still lower at 15 kg per capita per day and cereals also lower at 12 kg per capita per day. The reason for this fall in the availability of food is that the yield of food grains was not increasing. Since the mid-1990s the output has hovered nearly 415 million tonnes. In the eight years i.e. between 1996 and 2004 when agriculture was growing at a low rate of 2%, there was in fact zero growth in food (Sen, 2008).

The food crisis in India is different from other countries; because this crisis not a problem of availability, rather a problem of accessibility. Due to the inefficient market mechanisms, people are not access to their food. There has been loss of dynamism in the agriculture and allied sectors and also there is a gradual degradation of natural resources through overuse and inappropriate application of chemical fertilizers that has affected the soil quality resulting in stagnation at the yield horizon (The Economic Survey for 2007-2008). The present agricultural strategy reduced the public investment in general and hence not attracting private investment. Due to the ineffective marketing facilities and infrastructure, the agricultural commodities prices are increasing and they are subject to volatility also. Below a brief attempt is made to review some of the measures taken to tackle the problem of food availability.

### **2.3.6 Recent initiatives taken by the Government**

Government of India is making proper arrangements for the common people for ensuring adequate food security through various schemes and programmes. The main focus of all the interventions by the government in the case of

food security is to make food accessible and affordable to the common man. The recent initiatives on food security introduced by the government after the economic reforms are mainly classified as Mid Day Meal Scheme (MDMS), Targeted Public Distribution System (TPDS), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), and National Food Security Act (NFSA). Among these NFSA is recently introduced by the government of India for protecting the interests of the common man. Let us discuss these initiatives by the government one by one.

### **2.3.6.1 Mid Day Meal Scheme (MDMS)**

One of the main food security initiatives of the government of India was the established of Mid Day Meal Scheme (MDMS) in 1995 covering 2400 blocks under the label of National Programme of Nutritional Support to Primary Education (NP-NSPE). It was its long history of providing school meal to all the students on all school working days except holidays. The earlier form of MDMS intended to provide meals to the students belonging to poorest of the poor category. It was in the year 1925, a mid day meal programme was started in Madras Municipal Corporation and by the 1980's Gujarat, Kerala, Tamil Nadu, and Union Territory of Pondicherry captured the idea and implemented in the primary school students. In 1995, the official establishment of MDMS in India extended its service to both primary and secondary students of the schools. The main aim of the MDMS is to improve the nutritional levels of the students. The other objectives are enhance school's enrolment and attendance rates, protection of children from food insecurity, socialization of all scheduled without any cast discrimination, empowerment of women by creating job opportunities. The central and state governments contribute to the cost of the Scheme, 60 percent share given by the centre and 40 percent by the state. The central government provides grains and financing for food items. Costs for facilities, transportation, and labour are shared by the federal and state governments.

Table 2.15 clearly tells us the achievement of Mid Day Meal Scheme (MDMS) in the country. Children covered under this category and their

allocation of food grains remained almost similar from 2005-06 to 2011-12. In the budget allocation and total expenditure of MDMS from 2005-06 to 2011-12 are increasing. In 2005-06, the budget allocation was only Rs.3345 crore and it increased to Rs.10380 crore in 2011-12. The total expenditure in 2011-12 shows Rs.7697 crore, while it was Rs.3186 crore in 2005-06. This indicates that a gradual increase in the budget allocation and the total expenditure from 2005-06 to 2011-12.

**Table 2.15**  
**Achievement of MDMS**

<b>Components</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>
Children covered (in Crore)	11.94	10.68	11.37	11.19	11.36	10.46	10.35 (upto 30.09.11)
Food grain allocated (in lakh MTs)	22.51	21.60	24.79	29.30	27.71	29.40	29.09
Budget allocation (in Crore)	3345.26	5348.00	6678.00	8000.00	7359.15	9440.00	10380.00
Total Exp. (in Crore)	3186.33	5233.47	5835.44	6688.02	6937.79	9128.44	7697.24 (upto 29.12.11)

Source: Annual Report, 2011-12, Department of School Education & Literacy  
Department of Higher Education, Ministry of Human Resource Development,  
Government of India

Recently, National Food Security Act 2013 provided food security allowance to all children studying in both primary and upper primary classes where there is no supply of meals. In the year 2015, a Mid Day Meal Rules were framed by the government of India and it highlights the importance of testing the meals by accredited laboratories and the rule insisted Food and Drugs Administration Department of each state to collect the sample and to check the quality of the meals.



### 2.3.6.2 Revamped Public Distribution System (RPDS) and Targeted Public Distribution System (TPDS)

Public Distribution System (PDS) introduced by the government of India in 1947 and it provides essential food and non food items to the rural poor families at affordable prices. For the improved provision of food grains and to handle the shortage of food grains, government of India established Food Corporation of India during 1964. The procurement and sustainability of the essential commodities are owned by the Food Corporation of India (FCI) and the controlling and managing authority of the PDS is the Department of Civil Supplies. From the periods 1970s and 1980s, the PDS coverage was extended to the rural areas and after 1985 to tribal areas also. Presently, the commodities such as wheat, rice, sugar and kerosene are being allocated to the States/UTs for distribution under the Public Distribution System and in some States/UTs hand out additional substance of mass consumption through the PDS outlets such as pulses, salt and tea, etc. PDS has more than 400,000 Fair Price Shops (FPS) in all over the country and it allocates each year commodities worth more than Rs. 15,000 corer to about 16 corer families.

**Table.2.16**  
**Net Availability, Procurement and Public Distribution of Food grains in India**  
**(In Million Tonnes)**

Year	Net Production of Food grains	Net Import	Net Availability of Food grains	Procurement	Public Distribution
1991	154.3	(-) 0.10	158.6	19.6	20.8
1996	157.9	(-) 3.10	163.3	19.8	18.3
2001	172.2	(-) 2.90	157	42.6	13.2
2006	182.5	(-) 2.30	181.9	37	31.8
2011	214.2	(-) 2.9	203.1	64.5	47.9
2012	-	-	-	73.4	44.9
2013	-	-	-	58.9	44.5

Source: Ministry of Agriculture, Govt. of India; Note: P- Provisional.

Net Availability = Net Production + Net Imports - Changes in Government stocks

The net availability, procurement and public distribution of food grains in India are given in table 2.16. In the beginning of economic reforms, the net production of food grains was only 154 million tonnes and it gradually increased to 214 million tonnes in 2011 and the same trend is maintained by the net availability of food grains. In 1990-91, it was around 158 million tonnes and it increased to 203 million tonnes in 2011. The procurement from different states was gradually increased throughout the years except in 2006 and 2013. The procurement in 1991 was around 19 million tonnes and it increased to 58.9 million tonnes in 2013. The public distribution system progressively shows the increasing trend throughout the years.

The PDS with its national network of over 4.5 lakh fair price shops and distributing commodities worth more than Rs 300 billion annually to about 160 million households is perhaps the largest distribution network in the world. It evolved over many decades as a vital instrument of food policy in India for coping with scarcities, controlling prices of essential commodities in the open market and ensuring physical availability of essential supplies at affordable prices for the poor. The scheme however is supplemental in nature and is not intended to provide the entire requirements of households. According to the conventional poverty ratios, the Central Government estimates that there are as many as 65 million poor households in the country spread over different states and Union Territories.

Government of India has introduced another food security measure as Revamped PDS (RPDS) 1992 and it covered about 1775 blocks and provided food grains up to 20 kg per card. The major aim of this scheme was to improve and allocate the benefit of PDS in the hilly and remote region populations. These area specific programmes such as the Drought Prone Areas Programmes (DPAP), Integrated Tribal development Project (ITDP), Desert Development Programme (DDP) and certain Designated Hill Areas (DHA) are identified in consultation with State Governments for special focus, with respect to improvement of the PDS infrastructure. In these areas

government has to provide additional items such as soaps, pulses, salt etc to improve the wellbeing of the people in these backward areas.

**Table 2.17**

**Supply Management in Public Distribution System (In Million Tonnes)**

Year	Procurement			Off-take			Stocks		
	Rice	Wheat	Total	Rice	Wheat	Total	Rice	Wheat	Total
1990-91	12.92	11.07	23.99	7.91	8.58	16.49	10.21	5.60	15.81
1993-94	13.56	12.84	26.40	9.46	9.14	18.60	13.55	7.00	20.54
1996-97	11.88	8.16	20.04	12.31	13.32	25.63	13.17	3.24	16.41
1999-00	16.62	14.14	30.76	12.42	10.63	23.05	15.72	13.19	28.91
2002-03	19.00	19.03	38.03	24.85	24.99	49.84	17.16	15.65	32.81
2005-06	26.69	14.79	41.48	25.08	17.17	42.25	13.68	2.01	16.62
2008-09	32.84	22.69	55.53	24.62	14.88	39.50	21.60	13.43	35.58
2012-13	33.53	38.15	71.67	32.63	30.14	62.78	35.47	24.21	59.79
2014-15	7.85	25.08	32.93	7.04	5.20	12.24	27.92	39.44	67.38

Source: EPW Research Foundation

The supply management system in the public distribution system is depicted in table 2.17. It shows the procurement, off-take and stocks of rice and wheat from 1990-91 to 2014-15. In the case of procurement from 1990-91 to 1996-1997, the total food grains (rice + wheat) procurement fluctuates and after 1997, it shows an upward trend except in 2014-15. Off-take shows fluctuations in the case of both crops till the year 2000. From 2002 onwards, the off-take shows an increasing trend except the year 2014-15. The stock of food grains is kept by the Food Corporation of India (FCI) for meeting food emergencies. The stock of rice has varied till 2006 and after 2008 it showed an improvement and decline again in 2014-15. The stock of wheat has also changed throughout the years and the stock of total food grains shown an increasing trend after 2008.

The public distribution in India has certain weaknesses and there exists corruptive and inefficient administrative system under PDS, climate changes caused fall in the production and supply of the commodities, the cheap products lag behind better quality, increased malpractices etc. Therefore government of India started Targeted Public Distribution System (TPDS) in the year 1997. The main aim of this initiative is to remove the drawbacks of the earlier PDS by taking efficient methods of planning and distributing. It brings all the poor in all areas to the umbrella of this scheme. Under this scheme, the excess of the food supplies after giving to the BPL families were provided to the state as transitory allocation. This transitory allocation to the states was intended to transfer the food grains to the APL beneficiaries at a price higher than the prices for the BPL households but much lower than the market prices. Public distribution lagged behind the remote areas of India even after introduction of TPDS. The total number of BPL families estimated was 596.23 lakh in 1997 and it increased to 652.03 lakh in the year 2000. Under this system, a new scheme was introduced which is known as Anthyodaya Anna Yojana (AAY) in 2000. The scheme identified one crore hungry people or poorest of the poor among the total number of BPL families in India and it provides 25 kg of food grains to its beneficiaries at a highly subsidized rate of Rs.2 per kg. For wheat and Rs.3 per kg of rice per month in 2000 and revised it to 35 kg per month in 2002.

### **2.3.6.3 Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**

In order to eradicate the problem of chronic poverty and unemployment, government of India enacted a new act which provides 100 days employment to adult members of the rural household at a minimum statutory wages rate. The act came to be known as National Rural Employment Guarantee Act (NREGA). It is renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). The programme was initially focused on the rural agriculture workers. The season wise production of crops in India led the farmer remains unemployed in off seasons. In order

to reduce the level of seasonal unemployment, the government made a provision of 100 days of employment with a minimum wage of Rs.60 per day. The rate varies from state to state. For this employment programme, the skilled manual work is not needed. Any adult person may enjoy the benefit of the scheme. The procedure to get employment was to approach their respective grama Panchayath and demand the work. After verification gram Panchayath will issue a job card. The person who acquired job card has the right to do works provided within 15 days. The card holder may avail 100 days of employment during a financial year. He also avails payments within 15 days of work. If the grama Panchayath may not provide the work within 15 days, the job card holder has the right to approach the grama Panchayath for unemployment allowances. The wage will be transferred to the card holder's bank account or to their post office accounts. The program also ensures women participate by insisting on one-third participation by women.

#### **2.3.6.4 National Food Security Act (NFSA)**

National Food Security act was a major step taken by the government of India for providing food security to its masses. The act covers 75 % of the rural population and up to 50% of the urban population under Targeted Public Distribution System. The act also secures the nutritional status of women and children. The identification of the beneficiaries was the responsibility of the state governments. Under this act, the beneficiaries get rice at Rs. 3 per Kg, wheat at Rs. 2 per Kg and coarse grains at Rs 1Kg per month. Under this act the pregnant women and lactating mother get Rs. 6000 as maternity benefit. It provided food security allowance in the non-supply of food grains to its beneficiaries. The entitlement goes to 35 kg of grains to AAY families per month and 5 kg grains for priority households per month.

So far, implementation of the Act has taken place in 33 States/UTs Out of these, the UTs of Chandigarh, Puducherry and some parts of Dadra & Nagar Haveli are following DBT mode and providing direct cash transfer of food subsidy

to the beneficiaries. In remaining three states which are not under NFSA coverage, food grains are being allocated under erstwhile TPDS. The States/UTs which have not implemented NFSA are being allocated food grains under the erstwhile Targeted Public Distribution System (TPDS) under which Government of India has been making allocation of food grains @ 35kg per family per month for Anthyodaya Anna Yojana (AAY) and Below Poverty Line (BPL) families and @ 10kg-35kg per family per month for Above Poverty Line (APL) families. For the year 2015-16, an allocation of 289.46 lakh MT of food grains has been made under NFSA and 207.31 lakh MT of food grains has been made to States/UTs which have not implemented NFSA so far, under existing TPDS. In addition, a quantity of 50.01 lakh MT has been allocated for APL and BPL families in the non-NFSA States/UTs. The Government has also allocated a quantity of 11.70 lakh MT for natural calamities, festivals and additional TPDS requirements, etc (Ministry of Consumer Affairs, Food and Public Distribution).

NFSA provided for a period not exceeding 365 days after the commencement of the Act for identification of eligible households for receiving subsidized food grains under Targeted Public Distribution System (TPDS). At the end of this one year period, implementation of the Act started only in 11 States/UTs. Need for early implementation of the Act was vigorously pursued with States/UTs, and as a result 22 more States/UTs have joined NFSA since June 2015. Total number of States/UTs implementing NFSA now is 33 and more than 72 crore persons are being covered under the Act (Department of Food and Public Distribution).

Another noted government initiative was the adoption of National Agricultural policy in the year 2000 under the provision of World Trade Organization. The main aim of the policy was 4 percent annual growth rate in the agricultural sector to be achieved by 2015 with structural changes in this sector. During 2001-06, the growth rate was 3 percent per annum. The main achievement attained was the result of efficient use of resources in this sector, promotion of bio-technology and

adoption of new variety of seeds, fertilizers and methods of production. In India the notable another initiative taken by the government was the second green revolution and it was started in India in the year 2004. The first green revolution increased only the production of wheat and rice. It lagged behind all other crops cultivated. It is even bias existed in the regions too. The lopsided development of the agriculture sector again contributed to the rising disparity in the country. In this situation the government of India stood for another revolution covering all the crops and regions as well. It includes all the products such as cereals, cash crops, animal husbandry, fisheries, sericulture, etc. It is therefore known as the Rainbow revolution. (Ramesh Singh, 2013). National Mission for Sustainable Agriculture (NMSA) was another major food security initiative adopted by the government of India in the year 2011-12. The main aim was ensuring food security by protecting the natural resources. That is the mission sought for sustainability in agricultural sector. The mission aims at increased agricultural production by focusing on integrated farming and climate changes. These are the major recent initiatives taken by the government of India to promote food security and to wipe out the poverty from the nation.

### **2.3.7 Present status of food security in India**

India has displayed significant economic growth in recent years, but when it comes to the reduction of poverty and hunger, the figures are not so impressive. More than 300 million people of the population are poor and the rural poor constitute nearly 30 per cent of the population of the country. However, the official records of the government reveal that there is a reduction in poverty in recent years that is from 37.2% in 2004-05 to 29.8% in 2009-10. Rural poverty declined by 8 percentage points from 41.8% to 33.8% and urban poverty by 4.8 percentage points from 25.7% to 20.9% over the same period (World Bank 2012).

India is home of 25 percent of the world's hungry population. An estimated 43 per cent of children under the age of five years are malnourished (WFP

2012). It has the world's largest area under cultivation for wheat, rice, and cotton, and is the world's largest producer of milk, pulses, and spices (World Bank 2012). As the economy continues to grow, huge demand is to be met with in all sectors in the near future. It is estimated that US\$1 trillion will be needed to meet India's infrastructure needs in the next five years (World Bank 2012). Since the beginning of economic reforms in India, growth in agricultural GDP has shown high volatility. It has fluctuated from 4.8 percent per annum in the Eighth Five Year Plan (1992-96) to a low of 2.4 percent during the Tenth Plan (2002-06) before rising to 4.1 percent in the Eleventh Plan (2007-12). Due to deficient rainfall as well as unseasonal rains and hailstorms, agricultural production in 2014-15 is estimated to be lower than that in 2013-14, a year of record production. As per 4th Advance Estimates for 2014-15, total production of rice in the country is estimated at 104.80 million tonnes which is lower by 1.85 million tonnes than the production of rice during 2013-14. Production of wheat is estimated at 88.94 million tonnes is also lower than its record production of 95.85 million tonnes during 2013-14. The production of Coarse Cereals is estimated at 41.75 million tonnes which is lower than the production of Coarse Cereals during 2013-14. Total food grains production during 2014-15 is estimated at 252.68 million tonnes is lower by 12.36 million tonnes than the record production of 265.04 million tonnes of food grains achieved during 2013-14. Total production of pulses and oilseeds is estimated at 17.20 million tonnes and 26.68 million tonnes respectively are also lower by 2.05 million tonnes and 6.07 million tonnes than their production levels during 2013-14 (Annual Report 2015-16).

There are several challenges ahead with regard to ensuring the food security in India. Some of them are - the population explosion is one of the growing concerns. As population grows tremendously, it becomes the responsibility of the government to feed its citizens. Controlling population growth through various methods is to be welcomed. Another issue is with regard to the effective implementation and supervision of government policies and schemes. Climate change is a matter of growing concern with regard to food security because as far as India is concerned, most



of its agricultural produce depends on monsoon. Increasing soil erosion, falling water tables add to worsen the situation. All these lead to biodiversity loss, which ultimately affects the agriculture production. Above all these, we cannot ignore the fact that the resources such as land and water are limited in supply.

As far as India is concerned, the problems are no different, rather a few more adds up. Food insecurity in rural India is mainly due to lack of improvement in agricultural technologies used as well as instability in the market. With implementation of programmes to provide with new technologies and seed varieties, government should also provide security to the agricultural produce of the tenants and farmers. When food security in urban areas is considered, the worse hit is the urban slum, mostly formed as a result of migration. The high dependence on these labourers on daily employment wages result in irregular access to food. Unfortunately, nearly 50 per cent of the slums are not notified and so no access to public distribution system, rather these people are compelled to purchase food grains from the common market with competitive prices. Gender inequality is another cause of concern with regard to food security. Women and children are most affected, especially among the poor and poverty plays the major cause for this. Girls and women are less fed and the male members in the family enjoy a better status when it comes to food security. The depth of gender equality can be seen in terms of gender specific wage rates that exist in our society. Women are less paid as compared to male labourers, for the same amount of work done.

Failure of public distribution system adds to the issue. Government schemes and programmes can be availed on the basis of above poverty line (APL) and below poverty line (BPL) categorization. But there exists an inaccurate classification as APL and BPL and thereby the needy are not benefited, rather the undeserved enjoys the benefits through various schemes. Dishonest practices, lack of unmonitored nutritional and government programmes adds to the core. So, ensuring availability and accessibility to people under below poverty line is actually the need of

the hour. Improving purchasing power of the poor through various employment generation schemes can solve the issue to a great extent.

As far as food availability is concerned, there has been sufficient production in the country and the real problem lies in the distribution. The accessibility of food grains to the common man at affordable prices can solve the problem of food insecurity to a great extent. So the Government has given much attention to the distributional channels also and achieving intersectoral coordination between different sectors and ministries in order to improve the food security situation in the country.

“Overcoming poverty is not a task of charity; it is an act of justice”. These words of Nelson Mandela reveal the importance of ensuring food security not only in India, but globally. Government introduced many schemes and policies to ensure food security in the country. Of which many schemes did not show expected results due to many problems in the implementation machinery itself. Some of the important programmes include Mid-day Meal scheme, Annapurna scheme, National Food Security Mission and the like. Whether agreed or not, after the introduction of the new economic policy in 1991, the area, production and productivity of food grains declined significantly. In this chapter we have examined the trends in the area, production and yield of food grains in India under different regimes and came to a conclusion that the food grains area, production and yield declined due to multiple reasons and this trend is more visible after the implementation of reforms. These factors aggregated the food security issue at a macro level or at national level. In the succeeding chapter, the food situation at the state level is discussed.

**CHAPTER -3**

**SUPPLY AND DEMAND SIDE OF  
FOODGRAINS IN KERALA**

### **3.1 Introduction**

In this chapter an attempt is made to assess the supply and demand of food grains in Kerala. Supply is constituted by internal production, imports from other states and the quantity available through Public Distribution System. The demand is estimated based on the per capita consumption. In both of the estimations, one difficulty was the availability of reliable data, and this limitation is unavoidable in these types of estimations. First let us assess the supply side. Supply analysis can be done only by examining the trends in area, production and yield of food crops in the state.

### **3.2 Supply of Food Grains in Kerala: Trends in Area, Production and Yield: An Assessment**

The agriculture scenario in Kerala is unique and distinct from that of many other states in India in terms of land utilization pattern and cropping pattern. During the past three decades, the agriculture sector in Kerala has undergone wide-ranging changes in terms of ownership of land, cropping pattern, cultivation practices, productivity and intensity of cultivation. Agricultural sector in Kerala has a crucial role in the state economy and it continues to accommodate about two-fifth of the population. The share of agriculture and allied sectors in the total GSDP of Kerala has declined from 14.38 percent in 2011-12 to 11.48 percent in 2014-15 and to 10.38 percent in 2015-16 (Economic Review 2016).

Agriculture in Kerala has a pivotal role for securing the food requirements in the state. The sector contributed a major part of the food requirement in early 1960s and 1970s. In early 1960's and 70's, people were ready to work in the field and they mainly produced the food crops. The situation has changed at 1980's, because, the workers started concern about their income and profitability rather than the sustainability and the requirement of food grains. In early 90's agriculture in Kerala

mainly concerted in the market forces and they concentrated on more valued cash crops, rather than food crops. Earlier, the cropping pattern was decided by the needs of the people and the agronomic factors, but now, the cropping pattern is determined by the profitability and the market forces. Against the national average of over three-quarters of land under food grains, in Kerala only about one-fifth of the land is under food grains. The dominance of non-food crops leads to the decline in the area of traditional crops.

**Table 3.1**  
**Share of sectors in GSDP in Kerala**

<b>GSDP - at constant prices</b>	<b>1960-61</b>	<b>1970-71</b>	<b>1980-81</b>	<b>1990-91</b>	<b>2000-01</b>	<b>2009-10</b>	<b>2015-16</b>
GSDP	462 (100.0)	1255 (100.0)	3823 (100.0)	12195 (100.0)	63715 (100.0)	180812 (100.0)	467243.3 (100.0)
Primary Sector	241 (52.2)	652.6 (52.0)	1682.12 (44.0)	4756.05 (39.0)	14017.3 (22.0)	15966 (8.8)	49206.3 (11.6)
Secondary Sector	68 (14.7)	163.15 (13.0)	841.06 (22.0)	3170.7 (26.0)	14017.3 (22.0)	38249 (21.2)	111177 (26.2)
Tertiary Sector	153 (33.1)	439.25 (35.0)	1299.82 (34.0)	4268.25 (35.0)	35680.4 (56.0)	126597 (70.0)	264408 (62.2)

Source: Economic Review, State Planning Board, Thiruvananthapuram

Note: In rupees in crores; Percentages are shown in brackets

The Gross State Domestic Product (GSDP) has increased significantly in all the years from 462 crores in 1960-61 to 467243.3 crores in 2015-16. This means that the share of the three sectors namely, primary, secondary and tertiary has intensively contributed to the state GDP. The contribution of primary sector in the 1960-61 was 241 crores and it increased to 49206.3 crores in 2015-16 and the same trend was maintained by the secondary and tertiary sectors. In 2015-16, the secondary sector contribution was 111177 crores and it was only 68 crores in 1960-61. The tertiary sector contribution in 1960-61 was 153 crores and it increased to 264408 crores in 2015-16. These are the main contributions to state GDP, but the interesting point is that, the pattern of contribution of different sectors fluctuates over the years. From 1960-61 to 2015-16, the sectorial contribution has increased, but in 1960-61, the shares of secondary and

tertiary sectors were very low as compared to the primary sector, over the years the trend has changed. In 1960-61, the major share to state GDP was contributed by the primary sector, mainly agriculture followed by services sector but in 2015-16, the major share of GSDP is dominated by the tertiary sector; i.e the service sector and the second position goes to the secondary sector, mainly industrial sector and very low level contribution from the primary sector. So, the agricultural sector has declined all over the years and the contribution of tertiary sector has increased compared to other sectors.

The percentage share of each sectors are contributed in the Gross State Domestic Product (GSDP). In 1960-61 the dominant sector was primary sector and it contributes almost 52 percent to the GSDP and also 33 percent share contributed by the tertiary sector to the state GDP. The very low share contribution to the state GDP in 1960-61 was the secondary sector and in the coming years it increases its share contribution and reached almost 26 percent in 1990-91. From 1980's onwards the trend has been changed into reverse. The primary sector contribution was declined to 44 percent in 1980-81 and in the upcoming years it declined severely. It reaches 11 percent in 2015-16 from the 52 percent in 1960-61 and the major contribution reflected in the GSDP is from the tertiary sector, almost 62 percent contribution from this sector in 2015-16 and the growth of the sector increased almost double as compared from 1980's. The secondary sector contribution more or less equal in 2015-16 as compared from 1990's (Almost 26 percent)

### 3.3 Trends in State Agriculture Income

**Table 3.2**

**Trends in Agricultural Income in Kerala**

<b>Year</b>	<b>Agricultural Income (in Crores)</b>	<b>Share of Agriculture and allied sectors in GSDP</b>
1980-81	1293.84	34.21
1985-86	1379.24	34.13
1990-91	1761.35	33.43
1995-96	2012.17	27.58
2000-01	5448.00	16.23

2005-06	18042	16.67
2010-11	16110	10.1
2015-16	15412	9.1
2016-17	13210	8.95

Source: Economic Review, Various Issues

Note: up to 1995-96 at 1980-81 prices; 2000-01 at 1993-94 prices;  
2005-06 at base 2004-05

The trend in agricultural income is shown in table 3.2. The agricultural income was gradually increasing all over the years and the share of agriculture and allied sectors in Gross State Domestic Product has declined in all the years. In 1980-81, the share of agriculture and allied sectors was 34.21 percent and it gradually declined as 8.95 percent in 2016-17. The agricultural sector in Kerala is facing a serious crisis of growth. According to the data from the Directorate of Economics and Statistics (DES), using 2011-12 as base year, agriculture and allied sectors recorded a growth rate of 1.43 percent in the first year (2012-13) of the twelfth plan period. However, the sector witnessed a negative growth rate during the following three years with growth rate of (-) 6.31 percent in 2013-14, (-) 1.09 percent in 2014-15 and (-) 2.9 percent in 2015-16.

Kerala continues to be a consumer state and the food deficit state in India. The deficit in the food grain production in Kerala is result of wide gap between requirement and total production of cereals, pulses and vegetables. The declining trend in food production and food deficit are mainly because of the commercialization of the agricultural production (K P Kannan). The state has changed their platform from food grains to cash crops mainly after the economic reforms and the state has the major supplier of many cash crops, which are largely export-oriented in the country.

The state produces only 15 percent of its required quantity of food grains by itself, and for the remaining we depend on other states. From the time of the formation of the state, the per capita cereal consumption levels in Kerala, as well as the

per capita calorie consumption levels, have been lower than in India. In 1961-62, the per capita calorie consumption in Kerala was 1620 Kcal, while the corresponding average for India was 2445 Kcal (panikar, 1980). The status of Kerala with respect to in respect of some input indicators of food security is below the national average. Thus, the proportion of population of rural Kerala consuming less than 1890 k calories per consumer unit per day in 2009-10 at 14.6 percent is marginally higher than the national average of 11.6 percent. it is also to be noted that the gap between the state and the national figures in this respect has declined from 13.3 percentage points in 1993-94 to 2.5 percentage points in 2009-10. Further, the proportion for Kerala has come down from 39.7 percent in 1993-94 to 21.9 percent in 2009-10 (M S Swaminathan).



### 3.4 Land use pattern in Kerala

**Table 3.3**

**Land Utilization Pattern in Kerala (in percentages)**

<b>Year</b>	<b>Total geographical area</b>	<b>Forest</b>	<b>Land put to non agriculture uses</b>	<b>Barren and uncultivable land</b>	<b>Permanent pastures and other grazing land</b>	<b>Land under misc. tree crops</b>	<b>Cultivable waste</b>	<b>Fallow other than current fallow</b>	<b>Current fallow</b>	<b>Net area sown</b>	<b>Total cropped area</b>
1960-61	100	27.37	5.30	3.92	1.17	5.29	3.72	1.63	1.74	49.86	60.87
1965-66	100	27.34	5.91	2.82	0.72	5.18	2.80	0.83	0.84	53.55	65.39
1970-71	100	27.36	7.13	1.87	0.72	3.37	2.07	0.60	0.62	56.26	76.01
1975-76	100	27.83	6.67	2.02	0.51	2.17	2.92	0.59	0.94	56.34	76.72
1980-81	100	27.83	6.94	2.21	0.14	1.64	3.32	0.69	1.12	56.10	74.24
1985-86	100	27.83	7.17	2.14	0.11	1.29	3.23	0.72	1.11	56.39	73.77
1990-91	100	27.83	7.65	1.50	0.05	0.88	2.43	0.68	1.14	57.82	77.72
1995-96	100	27.83	8.06	1.11	0.03	0.69	1.91	0.75	1.32	57.64	78.94
2000-01	100	27.83	9.83	0.75	0.00	0.40	1.53	0.87	2.00	56.78	77.76
2005-06	100	27.83	9.53	0.68	0.01	0.25	1.70	1.16	1.81	54.87	76.82
2010-11	100	27.83	9.89	0.50	0.00	0.09	2.36	1.34	1.96	53.30	68.12
2015-16	100	27.82	11.18	0.33	0.00	0.06	2.56	1.42	1.80	52.05	67.61

Source: Agricultural Statistics, Government of Kerala

Table 3.3 tells us the land utilization pattern in Kerala (in Percentages). The utilization of land is classified into different heads; total geographical area, forest, land put to non-agriculture use, barren uncultivable land, permanent pastures and other grazing land, land under miscellaneous tree crops, cultivable waste, fallow other than current fallow, current fallow, net area sown and total cropped area. The data taken for the period 1960-61 to 2015-16 indicates that the forest as 27.8 percent. The land under forest ranges under the legal enactment and it is owned by the state or private. The forest area has decreased due to encroachment, development of the projects etc. The land put to non-agricultural use has increased tremendously all over the years from 5.30 percent in 1960-61 to 9.89 percent in 2010-11. It includes the land occupied by buildings, roads, railways, water and land put to uses other than agricultural purposes. Barren and uncultivable land includes areas such as mountains, deserts etc. Permanent Pastures and other grazing land includes all gazing lands, whether they are permanent pastures and meadows or not and village common grazing lands within forest areas. Land under cultivable waste represents the land available for cultivation but not taken up for actual cultivation. Such lands may be either fallow or covered with shrubs or jungles, which are not put to any use. Fallow other than current fallow includes all lands, which are taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years. The current fallow indicates the cropped area, which is kept idle during the current year. Net area sown consists of area sown with crops and orchards, with area sown more than once during the same year being counted only once. The total cropped area represents the net area sown and area sown more than once during the same year. In the case of total cropped area and net area sown, it shows more or less the same from 1960-61 to 2015-16.

The production of food grains is closely associated to gross cropped area, net cropped area and cropping intensity. The state level estimates of gross cropped area, net cropped area and cropping intensity has shown an increasing trend all over the years since the formation of the state. The cropping intensity increased only marginally.

**Table 3.4**  
**State level estimates of Gross cropped area, Net cropped area and cropping**  
**Intensity**  
**(1960-61 to 2016-17)**

<b>Year</b>	<b>Gross Cropped Area</b>	<b>Net Cropped Area</b>	<b>Cropping Intensity</b>
1960-61	60.87	49.86	122.1
1965-66	65.39	53.55	122.1
1970-71	76.01	56.26	135.1
1975-76	76.72	56.34	136.1
1980-81	74.24	56.10	132.3
1985-86	73.77	56.39	130.8
1990-91	77.72	57.82	134.4
1995-96	78.94	57.64	136.9
2000-01	77.76	56.78	136.9
2005-06	76.82	54.87	140.0
2010-11	68.12	53.30	127.8
2015-16	67.61	52.05	129.8

Source: Agricultural Statistics, Government of Kerala

Table 3.4 explains the State level estimates of gross cropped area, net cropped area and cropping Intensity from 1960-61 to 2015-16. It tells us that from 1960-61 onwards to 2015-16, the cropping intensity was more or less fluctuating on the same track. In 1960-61, the cropping intensity in Kerala was only 122.1 percent and it has increased to 140 percent in 2005-06 but in the next few years it has gone down. The intensification of land use as reflected by the cropping intensity indicates that there has been a substantial increase in intensive use of land during the period 1970-71 to 1975-76 but in the subsequent years cropping intensity was stagnant.

Due to mixed cropping pattern, the availability of irrigation facilities and other measures of intensification of agriculture, there is a considerable increase in the double or multiple cropped areas. In order to assess the trends in intensity that is the ratio of total cropped area to the net cropped area, the cropping intensity is calculated. On assessing the years from 1960-61, the cropping intensity was maximum in 2005-06 (Agricultural statistics, Kerala).

**Table 3.5**  
**Area under important food crops in Kerala (000 Ha)**

<b>Crops/Year</b>	<b>1960-61</b>	<b>1965-66</b>	<b>1975-76</b>	<b>1980-81</b>	<b>1985-86</b>	<b>1990-91</b>	<b>1995-96</b>	<b>2000-01</b>	<b>2005-06</b>	<b>2010-11</b>	<b>2015-16</b>
Rice	778.9	802.3	876.0	801.7	678.3	559.5	471.2	347.5	275.7	213.2	196.9
Sugar cane	9.1	9.2	7.6	8.0	7.8	7.6	5.6	3.4	6.8	2.8	1.4
Pepper	99.8	99.7	108.3	108.1	121.6	168.5	191.6	202.1	238.0	172.2	85.9
Ginger	11.9	11.8	11.7	12.2	15.7	14.1	12.9	11.6	12.2	6.1	5.0
Turmeric	4.7	4.5	2.5	3.3	3.2	2.7	4.0	4.1	3.4	2.4	2.6
Cardamom	36.7	40.4	54.0	54.0	60.6	43.8	44.2	41.3	41.4	41.2	39.7
Banana& Other Plantain	44.4	47.8	52.3	49.3	53.0	65.6	72.9	99.4	116.6	107.2	59.8
Cashew	54.3	87.4	109.1	141.3	137.7	115.6	103.3	92.1	78.3	43.8	43.1
Tapioca	242.2	229.7	326.9	245.0	202.9	146.5	113.6	114.2	90.5	72.3	69.4
Jack	0.0	0.0	0.0	61.9	55.3	71.0	79.2	0.0	0.0	75.2	93.0
Mango	59.6	62.2	68.2	62.6	59.3	75.5	81.9	90.6	88.0	62.2	80.0
Tamarind	0.0	0.0	0.0	11.0	11.1	15.0	16.6	0.0	0.0	11.9	11.6
Pineapple	0.0	0.0	9.0	5.4	4.8	4.7	7.5	10.7	12.8	10.2	7.9
Sweet Potatoe	8.0	8.2	5.9	5.1	4.8	2.6	1.8	0.0	0.0	0.3	0.3
Papaya	0.0	0.0	0.0	11.6	9.8	12.7	13.2	0.0	0.0	16.2	19.1
Drumstick	0.0	0.0	0.0	15.4	12.5	17.8	21.5	0.0	0.0	16.1	17.1
Other food crops	215.4	232.2	268.8	181.7	167.9	172.9	200.5	331.7	354.9	188.2	249.6
<b>Food Crops</b>	<b>1565.2</b>	<b>1635.3</b>	<b>1909.2</b>	<b>1778</b>	<b>1606.2</b>	<b>1496.2</b>	<b>1441.3</b>	<b>1349.1</b>	<b>1318.6</b>	<b>1041.5</b>	<b>982.3</b>

Source: Agriculture, Kerala state planning board

### **3.5 Trends in area under food crops in the state**

The area under important food crops in Kerala from 1960-61 to 2015-16 is shown in table 3.5. Taking altogether 16 crops the rice, tapioca and other food crops dominated in the area under food crops. While comparing the trends in the area from 1960-61 to 2015-16, the crops like Cardamom, Banana and other plantain, Mango, Papaya and Drumstick show an increasing trend in the area and all other crops declined in area in these years.

The area under food crops declined dramatically from 1960-61 to 2015-16. In 1960-61, the area under food crop was 1565.2 thousand hectares and it declined into 982.3 thousand hectares in 2015-16 and the highest contribution of area dominated in 1975-76 as 1909.2 thousand hectares. The area under rice has declined severely all over the years. In 1960-61, the area under rice was 778.9 thousand hectares and it declined to 196.9 thousand hectares in 2015-16. The area under rice increased from 1960-61 to 1975-76, and after that it has declined. The area under tapioca has also declined all over the years. Tapioca was one of the main food crops in Kerala in very early years.. But due to shifts in cropping pattern, the area under tapioca has declined considerably in recent years and the area was occupied by other cash crops including rubber. During 1975-76, the area under tapioca cultivation was 3.27 lakh hectares. Thereafter the area declined (Agricultural statistics, Kerala). In 1960-61, the area under tapioca was 242.2 thousand hectares and it declined to 69.4 thousand hectares in 2015-16. The area under tapioca has increased from 1960-61 to 1975-76, and after that it has declined. Kollam, Thiruvananthapuram and Idukki districts stand 1st, 2nd & 3rd positions in tapioca cultivation with an area of 23%, 21% and 10% respectively during the year 2014-15 (Agricultural statistics, Kerala).

While considering all food crops together, from the above discussions, it is evident that the area has declined due to the non-profitability and the unanticipated challenges. So, the area under the food crops is the loser and the area under cash crops is the gainer in the state. Whether these trends and pattern ensure sustainability of state agriculture is a debatable issue.

**Table 3.6****Production of important crops in Kerala (000 tonnes)**

<b>Crops/Year</b>	<b>1960-61</b>	<b>1965-66</b>	<b>1975-76</b>	<b>1980-81</b>	<b>1985-86</b>	<b>1990-91</b>	<b>1995-96</b>	<b>2000-01</b>	<b>2005-06</b>	<b>2010-11</b>	<b>2015-16</b>
Rice	1067.5	997.49	1331.2	1272	1173.1	1086.6	953.03	751.33	629.99	522.74	549.3
Sugar cane	38.1	40.9	41.8	48.2	42.6	52	28.3	27.6	9.2	27.2	13.8
Pepper	26.4	21.7	24.6	28.5	33.1	46.8	68.6	60.9	87.6	45.3	42.1
Ginger	9.4	11.2	28.8	32	43	45.7	46.5	42.7	56.3	33.2	22
Turmeric	4	3.8	2.6	6.1	6.2	5.1	9.6	9	8.2	6.2	7.1
Cardamom	0	0	0	0	0	0	0	0	0	0	19.5
Banana & Other Plantain	319.6	360.2	395	317.3	361.1	481.9	592.4	731.7	937.2	837.4	536.2
Cashew	84.6	98	119.9	81.9	80.2	102.8	82.8	66.2	68.3	34.8	24.7
Tapioca	1486.9	2746.4	4976.9	3788	3083.8	2681.7	2402.7	2505.6	2506	2332	2662.6
Jack	0	0	0	261.76	222.47	266.04	289	0	0	301	285
Mango	0	0	0	281.9	190	241.1	325.1	259.6	511.1	380.9	414.5
Tamarind	0	0	0	23.408	23.348	36.441	23.032	0	0	31.794	39.732
Pineapple	0	0	0	0	59.773	49.454	63.8	84.599	109.33	85.526	65.482
Sweet Potatoe	0	0	0	0	0	0	0	0	0	4.887	3.922
Papaya	0	0	0	67.388	43.268	55.863	57.479	0	0	100.77	113.08
Drumstick	0	0	0	0	0	0	0	0	0	15.838	16.295
Other food crops	0	0	0	0	0	0	0	0	0	0	0
<b>Food Crops</b>	<b>3036.5</b>	<b>4279.7</b>	<b>6920.8</b>	<b>6208.4</b>	<b>5361.9</b>	<b>5151.5</b>	<b>4942.3</b>	<b>4539.2</b>	<b>4923.2</b>	<b>4759.6</b>	<b>4815.3</b>

Source: Agriculture, Kerala state planning board

### 3.6 Trends in production of food crops in the state

The production of important food crops in Kerala from 1960-61 to 2015-16 is shown in table 3.6. All the food crops taken into consideration, the rice, tapioca and other food crops have dominated in the production of food crops. While comparing the trends in the production from 1960-61 to 2015-16, it shows that the crops like Tapioca, pepper, Banana and other plantain, Mango, Papaya and Drumstick show an increasing trend in the production.

The production of food crops increased dramatically from 1960-61 to 2015-16. In 1960-61, the production of food crops was 3036.5 thousand tonnes in 1960-61 and it increased to 4815.3 thousand tonnes in 2015-16 and the highest contribution of production dominated in 1975-76 as 6920.8 thousand tonnes. The production of rice declined severely in all the years. In 1960-61, the production of rice was 1067.5 thousand tonnes and it declined to 549.3 thousand tonnes in 2015-16. The production of rice increased from 1960-61 to 1975-76, and after that it has declined. The production of tapioca has increased all over the years. Broadly it is seen that there are fluctuations in production over the years, reasons are many.

### 3.7 Net changes in the area and important food crops in Kerala from 1960-61 to 2015-16

**Table 3.7**  
**Changes in Area and Production of important crops in Kerala from 1960-61 & 2015-16**

Crops/Year	Area (000 Hectares)			Production (000 Tonnes)		
	1960-61	2015-16	% variation	1960-61	2015-16	% variation
Rice	778.9	196.9	-74.72	1067.5	549.3	-48.54
Sugar cane	9.1	1.4	-84.62	38.1	13.8	-63.78
Pepper	99.8	85.9	-13.93	26.4	42.1	59.47
Ginger	11.9	5	-57.98	9.4	22	134.04

Turmeric	4.7	2.6	-44.68	4	7.1	77.50
Cardamom	36.7	39.7	8.17	0	19.5	0.00
Banana& Other Plantain	44.4	59.8	34.68	319.6	536.2	67.77
Cashew	54.3	43.1	-20.63	84.6	24.7	-70.80
Tapioca	242.2	69.4	-71.35	1486.9	2662.6	79.07
Jack	0	93	0.00	0	285	0.00
Mango	59.6	80	34.23	0	414.5	0.00
Tamarind	0	11.6	0.00	0	39.732	0.00
Pineapple	0	7.9	0.00	0	65.482	0.00
Sweet Potatoe	8	0.3	-96.25	0	3.922	0.00
Papaya	0	19.1	0.00	0	113.08	0.00
Drumstick	0	17.1	0.00	0	16.295	0.00
Other food crops	215.4	249.6	15.88	0	0	0.00
Food Crops	1565.2	982.3	-37.24	3036.5	4815.3	58.58

Source: Agriculture, Kerala state planning board & Agricultural Statistics, Government of Kerala

Table 3.7 explains the changes in area and production of important crops in Kerala from 1960-61 and 2015-16. The table trend signifies ups and downs in the area and production of certain crops in the state. The area under food crops in 1960-61 was 1565.2 thousand hectares and it declined to 982.3 thousand hectares in 2015-16, and there has been a percentage variation of almost 37.24 percent (Declining). The production of food crops in 1960-61 was 3036.5 thousand tonnes and it increased to 4815.3 thousand tonnes in 2015-16 and there has been a percentile variation of 58.58 percent (Increasing). In the case of area, almost all the food crops has declined except the case of cardamom, banana and other plantain, mango and other food crops and in the production of food crops, the crops like, Pepper, Ginger, Turmeric, Banana and other plantain and tapioca show a positive trend. In the case of rice, the area under rice drastically declined in these years and the percentage variation has shown a negative percentage of 74.72 and the production also shows a negative growth percentage of 48.54. The major food crops concentrated in the area and production in the state are rice, tapioca and other food crops. In the case of tapioca, the area in 1960-61 was 242.2



thousand hectares and it declined to 69.4 thousand hectares in 2015-16, i.e., almost 71.35 percent variation in these two years and the production in 1960-61 was 1486.9 thousand tonnes and in 2015-16, it increased to 2662.6 thousand hectares and there has been a percentage variation of 79.07 percent growth in the production. In the case of other food crops, the area and production has also shows slight increase in these years.

In the country as a whole, the area under food grains has declined marginally (around two percent) during the nineties but the output increased by 15 percent. At the beginning of the nineties, when the process of economic reforms was started, food grain production stood at 176 million tonnes and increased to 203 million tonnes in 1998-99. Kerala experienced a different trend, area under food grains declined by 37 percent and the output by 33 percent. Per capita monthly cereal consumption in rural India declined from 15.35 kg in 1971-72 to 13.50 kg in 1991-92. The decline was spread over in most states, but in Kerala it increased from 7.99 kg to 10.0 kg. The average is however still below the national average. Substitution of coarse cereals with fine grains along with a diversification in food consumption is presumed to be the reason for this decline. The increase in Kerala could be the result of an increased availability of rice through the PDS (K.P.Kannan).

The area under the food grains has declined considerably in all the years and it indicates that the food availability in the state will decline in future the state will experience severe problem of food insecurity in the state. It will further lead to a price rise of the major food grains in the state.

**Table 3.8**  
**Area under food grains in Kerala (000 Ha)**

<b>Crops/Year</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>	<b>2015-16</b>
Rice	290	264	234	213	197	198	197
Grains	5	3	3	3	1	0	0
Total Cereals & Millets	295	266	238	216	198	199	197
Pulses	8	7	4	4	3	4	4
<b>Total Food Grains</b>	<b>303</b>	<b>273</b>	<b>241</b>	<b>220</b>	<b>201</b>	<b>202</b>	<b>201</b>

Source: Agricultural Statistics, Government of Kerala

The area under food grains in Kerala is shown in table 3.8 from 2004-05 to 2015-16. The area under the food grains has gradually declined all the years. In 2004-05, the area under total food grains was 303 thousand hectares and it gradually declined to 201 thousand hectares in 2015-16. The major food crop in Kerala is rice; the area under the rice cultivation is also decreased from 290 thousand hectares in 2004-05 to 197 thousand hectares in 2015-16. The area under grains and pulses is very low in Kerala and this has further declined. In 2004-05, the area under total cereals and millets was 295 thousand hectares and it declined to 197 thousand hectares in 2015-16. This trend shows that the area under food grains in Kerala has gone down.

Cropping pattern in Kerala is dominated by cash crops. Food crops comprising of rice, tapioca, and pulses accounted for just 10.21 percent of the total cultivated area in 2015-16, while cash crops (Cashew, rubber, pepper, coconut, cardamom, tea and coffee) constituted 62.8 percent of the total cultivated area. Plantation crops like rubber, coffee, tea and cardamom accounted for 26.8 percent of the total cultivated area (Economic Review 2016). The area under food crops has declined severely in all the years due to more concentration of the people in the profit motive cash crops.

**Table 3.9**  
**Production of food grains in Kerala (000 tonnes)**

<b>Crops/Year</b>	<b>2004-05</b>	<b>2006-07</b>	<b>2008-09</b>	<b>2010-11</b>	<b>2012-13</b>	<b>2014-15</b>	<b>2015-16</b>
Rice	667	642	590	523	508	562	549
Grains	3	2	2	2	0	0	0
Total Cereals & Millets	670	643	592	524	509	562	550
Pulses	8	5	3	3	1	2	2
<b>Total Food Grains</b>	<b>679</b>	<b>649</b>	<b>595</b>	<b>527</b>	<b>510</b>	<b>564</b>	<b>552</b>

Source: Agricultural Statistics, Government of Kerala

The Production of food grains in Kerala is shown in table 3.9 from 2004-05 to 2015-16. The production of all food grains has gradually declined in all the

years. In 2004-05, the production of total food grains was 679 thousand tonnes and it gradually declined to 552 thousand tonnes in 2015-16. The major food crop in Kerala is rice; the production under the rice cultivation is also decreased from 667 thousand tonnes in 2004-05 to 549 thousand tonnes in 2015-16. The production of grains and pulses was very low in Kerala in almost all the years. In 2004-05, the production of total cereals and millets was 670 thousand tonnes and it declined to 552 thousand tonnes in 2015-16. This trend shows that the production of food grains in Kerala has shown a falling trend.. From 2004-05 to 2012-13, the trend shows that the production of food grains in Kerala has declined and a marginal increase in the next year (2014-15). The production trend signifies the downtrodden ratio in the case of food crops in the state. The food crops production in the state has declined severely in all the years and we mainly depend on other states for our own needs.

**Table 3.10****Area under rice in Kerala (in 000 Hectares)**

<b>YR/DIST</b>	<b>ALP</b>	<b>EKM</b>	<b>IDK</b>	<b>KNR</b>	<b>KSD</b>	<b>KLM</b>	<b>KTY</b>	<b>KZH</b>	<b>MLP</b>	<b>PLK</b>	<b>PTM</b>	<b>TCR</b>	<b>TVM</b>	<b>WYN</b>	<b>State Total</b>
1960-61	79.4	77.89	-	95.69	-	46.14	40	108.1	-	192.1	-	102.2	37.42	-	778.91
1965-66	81.6	83.46	-	94.24	-	49.64	40.5	110.2	-	195.1	-	108.8	38.73	-	802.33
1975-76	96.3	99.02	15.87	84.47	-	53.05	44.2	56.12	88.87	174.3	-	126.4	37.45	-	876.02
1980-81	82.5	102.5	9.26	73.47	-	50.06	32	45.45	80.02	183.6	-	110.3	32.58	-	801.7
1985-86	56.1	84.8	8.25	28.27	22.34	34.79	31.9	18.75	65.46	160.9	14.5	95.22	26.35	30.77	678.28
1990-91	60.7	63.08	5.08	19.58	14.29	30.51	26.3	12.06	51.93	145.7	14.23	74.04	21.68	20.34	559.45
1995-96	44.1	56.53	4.66	16.8	11.66	23.25	24.9	8.75	37.92	135.6	10.86	58.7	16.99	20.39	471.15
2000-01	37.7	37.43	3.47	11.79	9.16	14.94	16.7	6.74	23.15	118.7	6.28	39.38	7	15	347.46
2005-06	28.8	24.93	2.93	9.22	6.03	7.22	12.6	4.7	14.89	113.9	3.29	31.07	4.71	11.5	275.74
2010-11	37.1	9.02	1.82	6.34	4.16	3.34	14.8	3	8.95	87.51	2.99	20.26	2.92	11.05	213.19
2011-12	36.3	7.73	1.26	5.74	3.86	2.1	21.4	2.92	7.53	84	2.8	21.17	2.4	9	208.16
2012-13	36.2	3.94	1.18	6.68	3.51	1.39	17.6	3.51	6.67	79.2	2.28	23.1	1.82	10.23	197.28
2013-14	37.4	4.05	0.66	5.08	4.21	1.36	15.8	2.43	7.55	82.9	2.47	22.27	2	11.48	199.61
2014-15	34.4	4.64	0.7	4.96	2.67	1.33	17.3	2.32	8.4	82.91	2.59	24.15	2.09	9.69	198.16
2015-16	31.7	5.95	0.89	5.48	3.84	1.56	16.3	2.87	8.69	81.12	2.53	24.63	2.12	9.2	196.87

Source: Agriculture, Kerala state planning board & Agricultural Statistics, Government of Kerala

Note: YR-Year, DIST- District, ALP-Alappuzha, EKM-Ernakulam, IDK-Idukki, KNR-Kannur, KSD-Kasargod, KLM-Kollam, KTY- Kottayam, KZH-Kozhikode, MLP-Malappuram, PLK-Palakkad, PTM-Pathanamthitta, TCR-Thrissur, TVM-Thiruvananthapuram, WYN-Wayanad

### **3.8 District wise trend area and production of rice in Kerala: The major food crop**

The area under rice in Kerala in district wise from 1960-61 to 2015-16 shown in table 3.10. The area under food crops has declined dramatically from 1960-61 to 2015-16. In 1960-61, the area under food crop was 1565.2 thousand hectares in 1960-61 and it declined to 982.3 thousand hectares in 2015-16. The area under rice has considerably declined in all the years. In 1960-61, the area under rice was 778.9 thousand hectares and it declined to 196.9 thousand hectares in 2015-16. The area under rice increased from 1960-61 to 1975-76, and after that it declined. In 1960-61, the highest area of rice cultivated districts in the state was Palakkad, Thrissur and Kozhikode respectively. In 2015-16, the situation has changed drastically; the area under rice has severely declined from the earlier situation. In 2015-16, the area under rice cultivation is highest in the districts of Palakkad, Alappuzha and Thrissur districts respectively. In 1960-61, the area under rice was highest in Alappuzha district (79.4 thousand hectares) and it declined to 31.7 thousand hectares in 2015-16. In Palakkad district, the area under rice was 192.1 thousand hectares in 1960-61 and it declined to 81.12 thousand hectares. In 1960-61, Thrissur district occupied 102.2 thousand hectares under rice and it considerably declined to 24.63 thousand hectares in 2015-16. Least area under rice cultivation in Kerala was in Idukki district, because of the geographical features. Palakkad, Alappuzha and Thrissur are the major area of rice cultivation contributed districts in the state.

The total rice area during the year 1961-62, was 7.53 lakh hectares and in 1975-76 it was 8.76 lakh hectares. Thereafter a steady decrease in rice cultivation and reached to 2.29 lakhs hectares during the agricultural year 2007-08. But in 2008-09, area of rice cultivation was increased 2.34 lakh hectares. Comparing with the year 1975-76, area under rice cultivation was decreased by 77% during the year 2014-15. Rice accounted 7.55% of the total cropped area in the state during 2014-15. During the year 2014-15, rice area increased in Thiruvananthapuram, Pathanamthitta, Kottayam, Idukki, Ernakulam, Thrissur, Palakkad and Malappuram districts rice is being cultivated largely

in winter season (45%) and least in summer season (23%). Palakkad district occupies 1st place in Autumn & Winter seasons, Alappuzha district occupies 1st in summer season. Alappuzha, Kottayam, Thrissur and Kannur districts are in the next positions in autumn season, whereas Thrissur, Malappuram, Wayanad and Alappuzha, occupy the next positions in winter season. Kottayam and Thrissur come in the second and third position in summer rice cultivation (Agricultural Statistics).

**Table 3.11**  
**District wise rice area and its percentage to total rice cropped area in Kerala**  
**(2014-15)**

<b>District</b>	<b>Rice Area (Ha)</b>	<b>% to state total</b>	<b>Gross cropped area</b>	<b>% to Rice area to gross cropped area</b>
<b>ALP</b>	34415	17.37	103135	33.37
<b>EKM</b>	4644	2.34	166461	2.79
<b>IDK</b>	67	0.35	272042	0.26
<b>KNR</b>	4955	2.5	221110	2.24
<b>KSD</b>	2655	1.34	152632	1.75
<b>KLM</b>	1327	0.67	151246	0.88
<b>KTY</b>	17295	8.73	202423	8.54
<b>KZH</b>	2321	1.17	201994	1.15
<b>MLP</b>	8402	4.24	240730	3.49
<b>PLK</b>	82912	41.84	300622	27.58
<b>PTM</b>	2592	1.31	103344	2.51
<b>TCR</b>	24151	12.19	174797	13.82
<b>TVM</b>	2093	1.06	162748	1.29
<b>WYN</b>	9690	4.89	171340	5.66

Source: Agricultural Statistics, Government of Kerala

Note: ALP-Alappuzha, EKM-Ernakulam, IDK-Idukki, KNR-Kannur, KSD-Kasargod, KLM-Kollam, KTY-Kottayam, KZH-Kozhikode, MLP-Malappuram, PLK-Palakkad, PTM-Pathanamthitta, TCR-Thrissur, TVM-Thiruvananthapuram, WYN-Wayanad

District wise Rice area and its percentage to total rice cropped area in the state and the percentage of rice area to the total cropped area of the state for the agricultural year 2014-15 are shown in table 3.11. The area is very low in Idukki district. The rice area and the percentage of rice area to gross cropped area are highest in three districts, namely Alappuzha, Palakkad and Thrissur.

**Table 3.12****Production of Rice in Kerala (in 000 Tonnes)**

<b>YR/DIST</b>	<b>ALP</b>	<b>EKM</b>	<b>IDK</b>	<b>KNR</b>	<b>KSD</b>	<b>KLM</b>	<b>KTY</b>	<b>KZH</b>	<b>MLP</b>	<b>PLK</b>	<b>PTM</b>	<b>TCR</b>	<b>TVM</b>	<b>WYN</b>	<b>State Total</b>
1960-61	120.3	106.8	-	101.1	-	69.21	64	116.7	-	305.9	-	126.1	57.26	-	1067.53
1965-66	92.6	93.38	-	107.6	-	62.57	37.7	107.9	-	320.1	-	122.4	53.18	-	997.49
1975-76	140.9	132.5	26.15	111.6	-	81.7	76.1	66.22	125.13	349.7	-	162.2	59.06	-	1331.19
1980-81	144.9	144.6	15.5	97.36	-	82.19	58.5	54.14	107.49	373.8	-	147.6	45.99	-	1271.96
1985-86	112	142.8	16.85	43.1	35.45	60.84	58.1	22.39	93.06	307	27.72	151.9	47.11	54.8	1173.05
1990-91	131.7	102.7	10.95	32.31	24.44	58.39	62.7	14.83	80.83	324.9	33.23	129.3	38.36	41.97	1086.58
1995-96	121.1	102	10.82	26.05	19.58	45.37	55.6	10.59	65.21	280.4	27.21	110.7	31.83	46.65	953.03
2000-01	103.5	65.31	7.89	20.68	17.48	30.81	43.1	9.05	43.8	262.2	17.16	82.11	14.47	33.8	751.33
2005-06	71.75	48.03	7.5	17.38	13.79	16.06	31.3	6.31	31.38	266.6	7.52	72.95	11.03	28.39	629.99
2010-11	91.33	17.82	4.74	13.31	9.83	7.16	41	3.81	21.07	218.2	6.63	53.08	6.92	27.91	522.74
2011-12	112	16.57	3.14	12.17	8.56	4.77	63.6	4.27	18.58	224.4	8.99	62.32	6.14	23.53	568.99
2012-13	104.6	8.53	3.18	14.24	8.12	2.93	51	5.33	15.38	189.2	6.04	67.57	4.1	28.05	508.3
2013-14	106.9	9.06	1.8	11.29	9.44	3.23	50.7	3.85	19.71	238.1	7.55	66.65	5.33	30.76	564.33
2014-15	103.1	9.97	1.8	11.16	6.1	3.15	49.4	3.42	22.28	236.4	7.57	76.02	5.56	26.17	562.09
2015-16	89.34	12.65	2.2	11.52	8.56	3.35	49.5	3.61	23.65	228.5	8.4	78.89	5.45	23.7	549.28

Source: Agriculture, Kerala state planning board & Agricultural Statistics, Government of Kerala

Note: YR-Year, DIST- District, ALP-Alappuzha, EKM-Ernakulam, IDK-Idukki, KNR-Kannur, KSD-Kasargod, KLM-Kollam, KTY-Kottayam, KZH-Kozhikode, MLP-Malappuram, PLK-Palakkad, PTM-Pathanamthitta, TCR-Thrissur, TVM-Thiruvananthapuram, WYN-Wayanad

The production of rice in Kerala district wise from 1960-61 to 2015-16 is shown in table 3.12. The production of food crops has increased dramatically from 1960-61 to 2015-16. In 1960-61, the production of food crop was 3036.5 thousand tonnes in 1960-61 and it increased to 4815.3 thousand tonnes in 2015-16 and the highest contribution of production of rice dominated in 1975-76 as 6920.8 thousand tonnes. The production of rice has declined severely in all the years. In 1960-61, the production of rice was 1067.5 thousand tonnes and it declined to 549.3 thousand tonnes in 2015-16. The production of rice increased from 1960-61 to 1975-76, and after that it declined. In 1960-61, the highest rice cultivated districts in the state were Palakkad, Thrissur and Alappuzha respectively. In 2015-16, the situation has changed drastically; the production of rice has severely declined from the earlier situation. In 2015-16, the rice cultivation was more in the districts of Palakkad, Alappuzha and Thrissur districts respectively. In 1960-61, the production was in Alappuzha district 120.3 thousand tonnes and it declined to 89.34 thousand tonnes in 2015-16. In Palakkad district, the production of rice was 305.9 thousand tonnes in 1960-61 and it declined to 228.5 thousand tonnes. In 1960-61, Thrissur district production of rice was 126.1 thousand tonnes and it declined to 78.89 thousand tonnes in 2015-16.

Rice is the principal crop extensively cultivated in all the districts of the state having a unique three season pattern viz autumn (July- October), winter (November – February) and summer (March – June). The production of rice decreased from 5, 64,325 tonnes to 5, 62,092 tonnes over the previous years which shows a decrease of -0.4 %. The yield rate of rice is 2837 kilogram/hectare against the previous years of 2827 kilogram/hectare. The productivity of rice in autumn, winter and summer seasons were 2524 kilogram/hectare, 2859 kilogram/hectare, 3235 kilogram/hectare respectively. The productivity of rice in autumn season was highest in Kottayam district and lowest in Kozhikode district. In winter the highest productivity is in Palakkad district and lowest is in Kozhikode district. In summer season the productivity was highest in Malappuram district and the same was lowest in Kollam district. As usual, Palakkad



district occupied the first position in the production of rice and lowest in Idukki district (Agricultural Statistics).

In the above pages we made an elaborate discussion on the trends in area, production and yield of food crops in the state over the years, both at macro level and also at micro (district) level. The discussion led to the inference that, there are and production have fallen significantly and the state is moving towards a food crisis. In continuation of this, now we turn to estimate the requirement of the state based on population. Different methodologies are available to estimate but none are very reliable because of the estimation complications at the primary level. Hence, the present study relies on the estimations made by State Planning Board.

### 3.9 Estimated rice requirement in Kerala

**Table: 3.13**  
**Estimated rice Requirement, Internal Availability, and Supply Gap in Kerala (in 1000 tonnes)**

Year	Estimated Population (in 00000)	Availability from internal production	Net Availability	Estimated Requirement	Estimated Deficit	Percentage Deficit
1975-76	233.10	1331	1198	2961	1763	56
1980-81	254.53	1272	1145	3263	2118	62
1985-86	272.15	1173	1056	3262	2206	67
1990-91	290.99	1087	978	3890	2912	71
1995-96	309.65	953	858	3824	2966	76
2000-01	318.65	751	676	3830	3154	82
2005-06	332.65	630	567	3952	3385	85
2010-11	333.87	523	515	3887	3372	86
2015-16	334.06	549.2	492.6	3942	3449	85

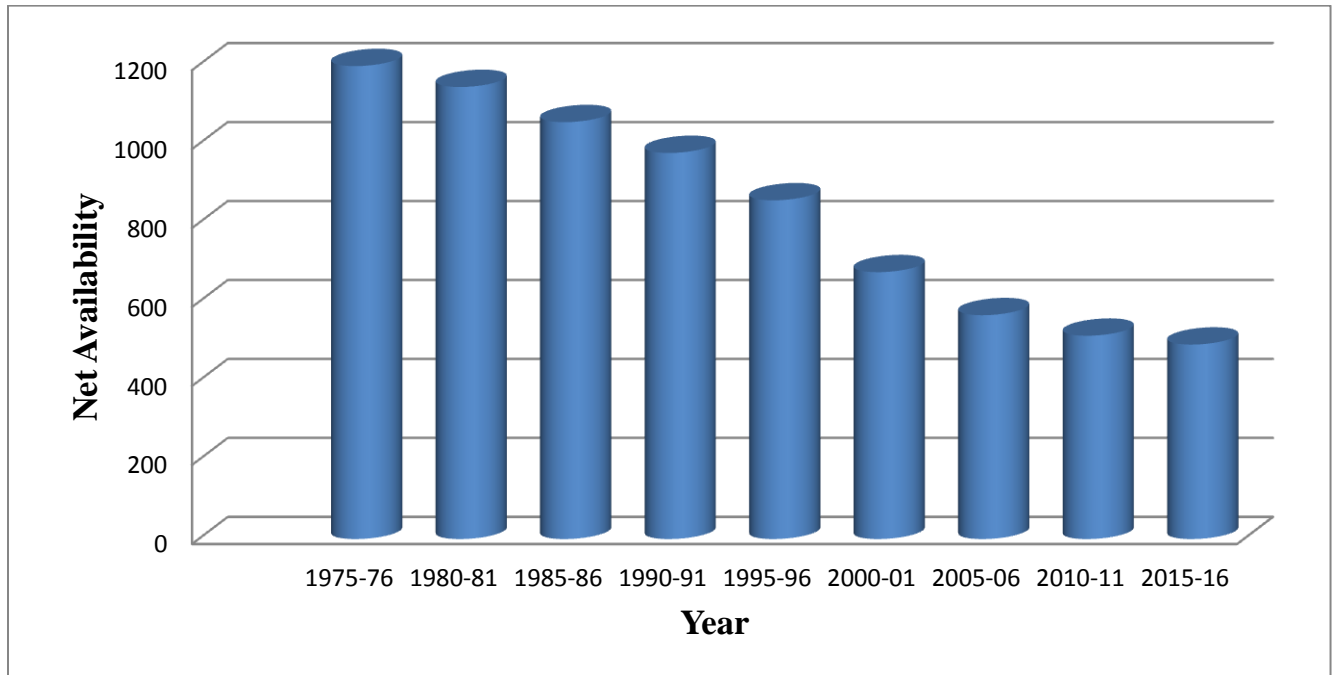
Source: Economic Review, State Planning Board, Thiruvananthapuram

Table 3.13 explains the estimated rice requirement, internal availability and supply gap in Kerala from 1975-76 to 2015-16. The trends in population show increase all over the years, from 233.10 lakh population in 1975-76 to 334.06 lakh population in 2015-16. Due to the increase in the population in all the years, the requirement of commodities has increased especially food grains, and primarily the staple food, rice. The availability from internal production has declined all over the years, from 1331 thousand tonnes in 1975-76 to 549.2 thousand tonnes in 2015-16, this indicates that the production in the state has declined drastically in all the years and the net availability also declined. The availability from internal production in 1975-76 was 1331 thousand tonnes and the net availability was only 1198 thousand tonnes and also in 2015-16, the availability from internal production was 549.2 thousand tonnes and the net availability only 492.6 thousand tonnes, which means, the net availability has significantly declined over the years. The estimated deficit is calculated taking the differences between the estimated requirement and the net availability. In 1975-76, the estimated deficit was 1763 thousand tonnes and it has increased to 3449 thousand tonnes in 2015-16, i.e; from the 56 percent of the deficit percentage in 1975-76 to 85 percent in 2015-16.

The estimated net availability of rice is shown in figure 3.1. It highlights the net food availability in the state through internal production. From 1198 thousand tonnes of net availability of food was available in 1975-76 and it declined to 492.6 thousand tonnes in 2015-16 due to several reasons like shifting of cropping pattern, food habits, climate change, cost of labour etc. From 1990-91 onwards, the path of net availability of food was rigorously declined and the percentage deficit of rice was increased. From 1970's to 2015's, the trend of net availability of food shows the declining path and the same trend may reflect in the future years, if there is no change in the cultivation practices.

**Figure 3.1**

**Estimated net availability of rice in Kerala (in 1000 tonnes)**



Source: Economic Review, State Planning Board, Thiruvananthapuram

The deficit of rice shows the inability of the state to produce the major food grain through internal production and at present it cope up with the imports from other states. The estimated deficit is shown in figure 3.2 and it calculated as the difference between the estimated requirement and the net availability of rice. The trend from 1975-76 to 2015-16 give an idea about the severity of the shortage of the major food grain in the state and it reflect the upward trend, i.e, from 1763 thousand tonnes in 1975-76 to 3449 thousand tonnes in 2015-16, almost doubled as in 1970's. At present, the percentage of deficit is almost 85 percent which means the state only producing the 15 percent of our requirements. In 1975-76, the state produced almost 44 percent of our requirements and the percent deficit of rice at the time was 56 percent.

**Figure 3.2**

**Estimated deficit of rice in Kerala (in 1000 tonnes)**

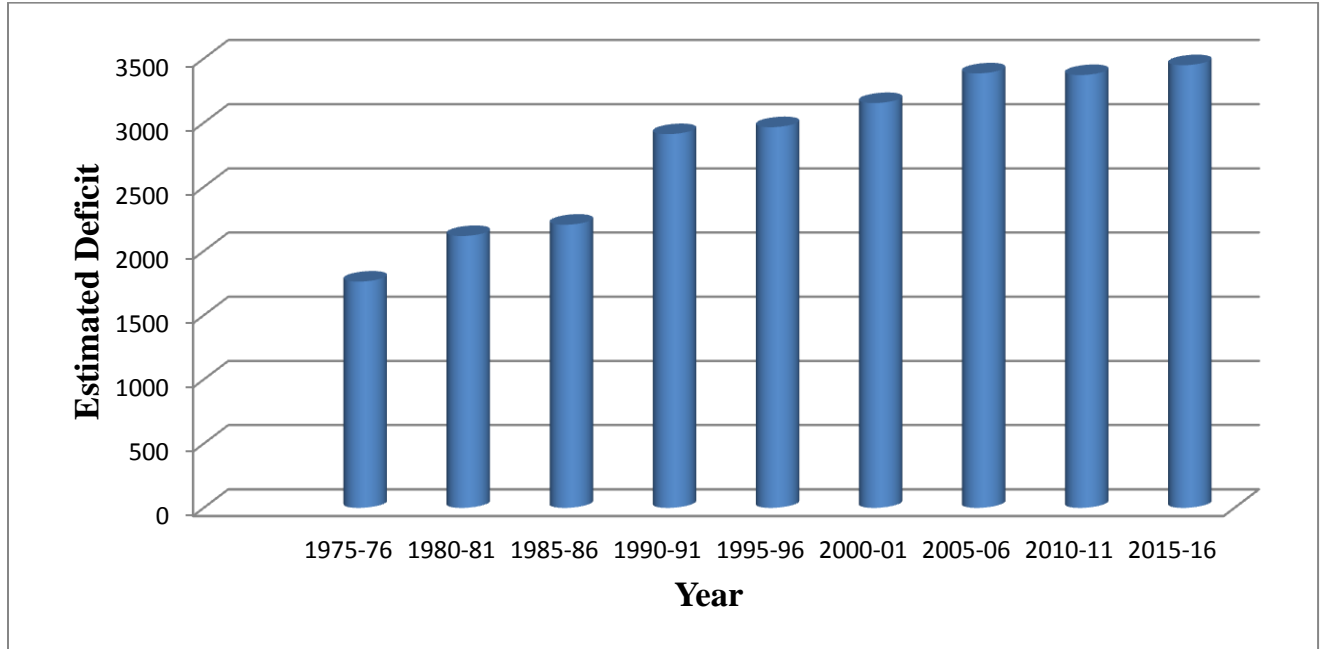
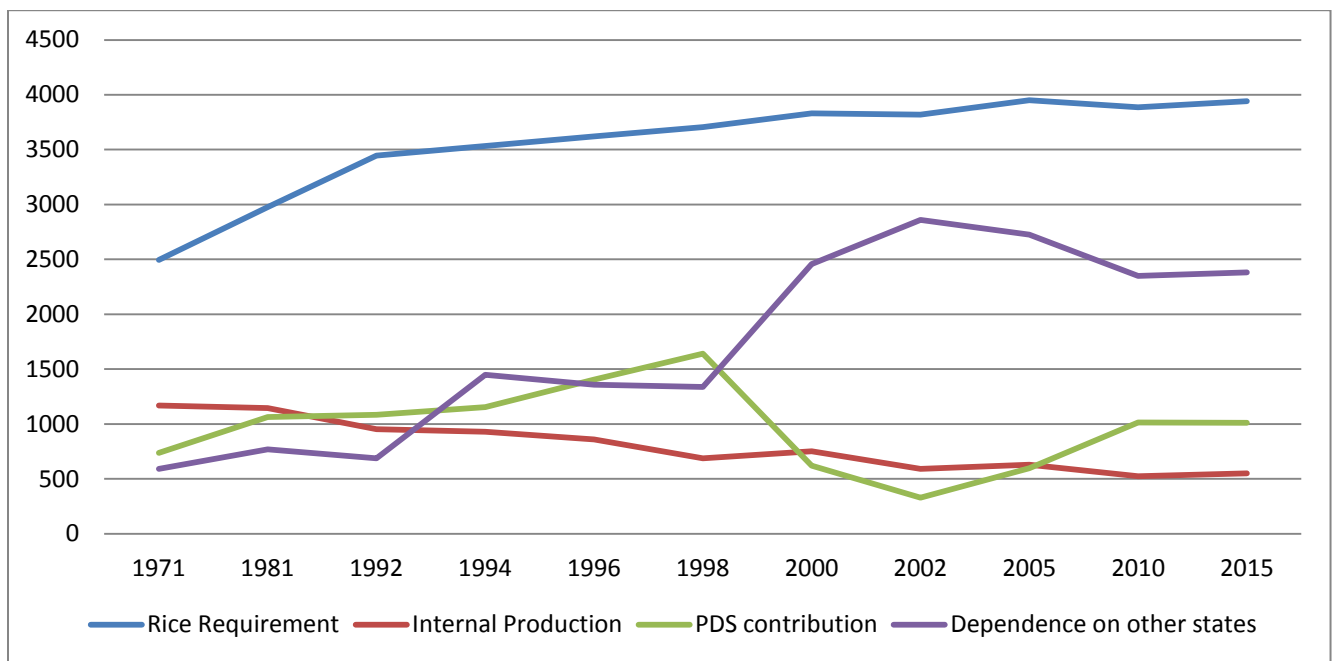


Figure 3.3 shows the requirement of rice in Kerala, the internal production, PDS contribution and dependence on other states from 1971 to 2015. The trend in the table illustrates that the requirement of rice has increased over the years from 2496 thousand tonnes in 1971 to 3941.7 thousand tonnes in 2015. Rice is the staple food in Kerala, but the present level of production cannot meet total requirement i.e; in 1971, only 47 percent come from the internal production and the remaining needs, we depend upon the other states and the Public Distribution Systems. The internal production in 1971 was 1168 thousand tonnes, only 47 percent, and it gradually declined in over the years and in 2015 it reaches 549.2 thousand tonnes. In 44 years, the production declined from 47 percent to 15 percent. So the remaining needs we depend on other states, in 1971, the dependency ratio of other states was 23.5 percent and now it increased to almost 61 percent, i.e.; in 1971 the dependence on other states was 591 thousand tonnes and in 2015, it has increased to 2380.5 thousand tonnes. The remaining gap is filled by the Public Distribution System (PDS); the contribution of PDS increased dramatically in

all the years, from 737 thousand tonnes in 1971 to 1012 tonnes in 2015, but the contribution of PDS fluctuates in over the years. The contribution of PDS has increased tremendously from 1971 to 1996 and after that, it declined and again in 2010, it showed an increasing trend and the highest contribution from PDS was in the year 1996, 2147 thousand tonnes (39 percent). The trend signifies that the requirement of rice of the state is increasing and the internal supply is very short to satisfy the needs of the state. Thus the need of the people can only be satisfied through the import from other states and depending on the share from the Public Distribution System. The data on food grains from other states to Kerala (imports) are available and very accurate data relating to the import from outside the country to the state is not available.

**Figure 3.3**

**Rice Requirement, Internal Production and PDS contribution (in 1000 tonnes)**



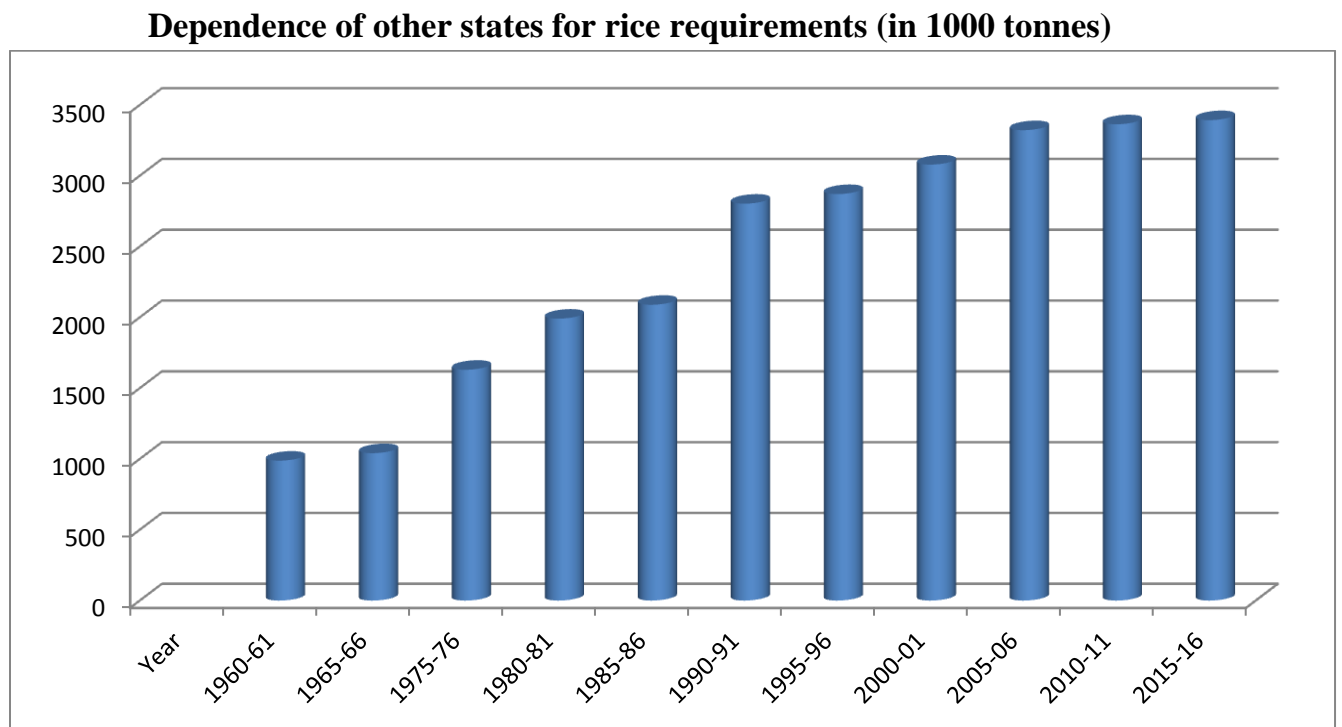
Source: Economic Review, State Planning Board, Thiruvananthapuram

The requirement of rice and the dependence of other states are increasing in throughout the years from 1971 to 2015. The internal production in the state in all the years is declining trend and the contribution of Public Distribution System (PDS) is more

or less fluctuating in all over the years, it reaches the maximum in 1998 and declined very least in 2002.

The dependence of other states for rice requirements are shown in figure 3.4 from the year 1960-61 to 2015-16. It emphasizes the increase in the dependency ratio in throughout the years. In 1960-61, the dependence of other states for rice requirements was 48 percent and it increased into 85 percent in 2015-16, which means the production of the staple food grain in the state was gradually declined from 52 percent in 1960-1 to 15 percent in 2015-16. Almost 3393 thousand tonnes of rice required in the state in 2015-16 as compared to 1991 thousand tonnes in 1980-81, which implies the dependence of other states for our daily rice requirements is increasing in the present year and the trend signifies it may increase in the future years also.

**Figure 3.4**



Source: Economic Review, State Planning Board, Thiruvananthapuram

**Table 3.14**  
**Internal production, dependence on other states and total requirement of**  
**food grains in Kerala (in 000 tonnes)**

<b>Year</b>	<b>Internal Production</b>	<b>Dependence of other states</b>	<b>Total Requirement</b>
1960-61	1067 (52)	988 (48)	2055 (100)
1965-66	997 (49)	1041 (51)	2038 (100)
1975-76	1331 (45)	1630 (55)	2961 (100)
1980-81	1272 (39)	1991 (61)	3263 (100)
1985-86	1173 (36)	2089 (64)	3262 (100)
1990-91	1087 (28)	2803 (72)	3890 (100)
1995-96	953 (25)	2871 (75)	3824 (100)
2000-01	751 (18)	3079 (82)	3830 (100)
2005-06	630 (14.5)	3322 (85.5)	3952 (100)
2010-11	523 (14)	3364 (86)	3887 (100)
2015-16	549 (15)	3393 (85)	3942 (100)

Source: Economic Review, State Planning Board, Thiruvananthapuram

Table 3.15 clearly tells us the internal production, dependence on other states and the total requirement of food grains in the state from 1960-61 to 2015-16. The internal production has drastically declined from 1067 thousand tonnes in 1960-61 to 549 thousand tonnes in 2015-16 and the percentage rate in 1960-61 was 52 percent of the internal production and it has reduced to 15 percent in 2015-16. So, we have to depend on other states for our daily requirements and needs. In 1960-61, the requirement

of rice was only 2055 thousand tonnes and it has increased to 3942 thousand tonnes in 2015-16, that means, in all the years the dependent ratio of the other states has increased severely. The dependency ratio is increased to 85 percent in 2015-16 as compared it was 55 percent in 1975-76. In 1960-61, our internal production of food grains was 52 percent and in 2015-16, it was reduced to 15 percent. As a consequence of this, the food grains dependency ratio of the state has increased over the years. As in the case of previous chapter, this chapter indicates that the food security is in question in the state. This trend is the result of different factors like shifts in cropping pattern, bad impact of technology on area and production, agrarian policies, shifting consumer preferences. Along with this, the magnitude of the food security problem is influenced by the food basket preferred by the people. Hence, in the succeeding chapter, an attempt is made to identify the rural food basket in Kerala and also to identify its determinants.



**CHAPTER - 4**  
**AN APPRAISAL OF RURAL FOOD**  
**BASKET IN KERALA**

## 4.1 Introduction

The chapter deals with the analysis and interpretation of primary data collected from the sample households from rural areas in Kerala. Details regarding the availability, accessibility and affordability of food crops, land use pattern, cropping pattern, sources and purchase of food items, influential factors of the food articles etc. are described in the analysis. The study also examined to assess the food basket of rural households in Kerala and identify the determinants of rural food baskets.

For the purpose of primary data, three villages were selected Mulakuzha village from Alappuzha district, Mattathur village from Thrissur district and Alanallur – I village from Palakkad district. Out of these villages, 3 wards were selected from each village for the study in accordance with the size of rural household's population. Ward-09, ward-04, and ward-07 were selected from Mulakuzha village. Ward-02, ward- 18, and ward-22 were selected from Mattathur village. Ward-10, ward- 07, and ward-08 were selected from Alanallur-I village. A field survey was carried out during the period from August 2016 – December 2016 based on personal interview by using a detailed pre-structured schedule. The schedule gives the detailed information in order to make the study more articulate and generous 509 sample households in the rural areas were surveyed, on the basis of 10 % of the rural population in the selected wards in each village. A brief profile of the sample districts are presented in the following (table 4.1).

**Table 4.1**  
**A brief profile of sample districts**

<b>Description</b>	<b>Thrissur</b>	<b>Palakkad</b>	<b>Alappuzh</b>	<b>Kerala</b>
Total Area	186944	447584	461858	3886287
Number of Taluks	5	5	6	63
Number of Blocks	16	13	12	152
Number of Villages	254	156	92	1018
Number of Panchayaths	92	91	73	941
Number of Households	759210	637220	535958	7853754
Latitude	10.52	10.78	9.49	10

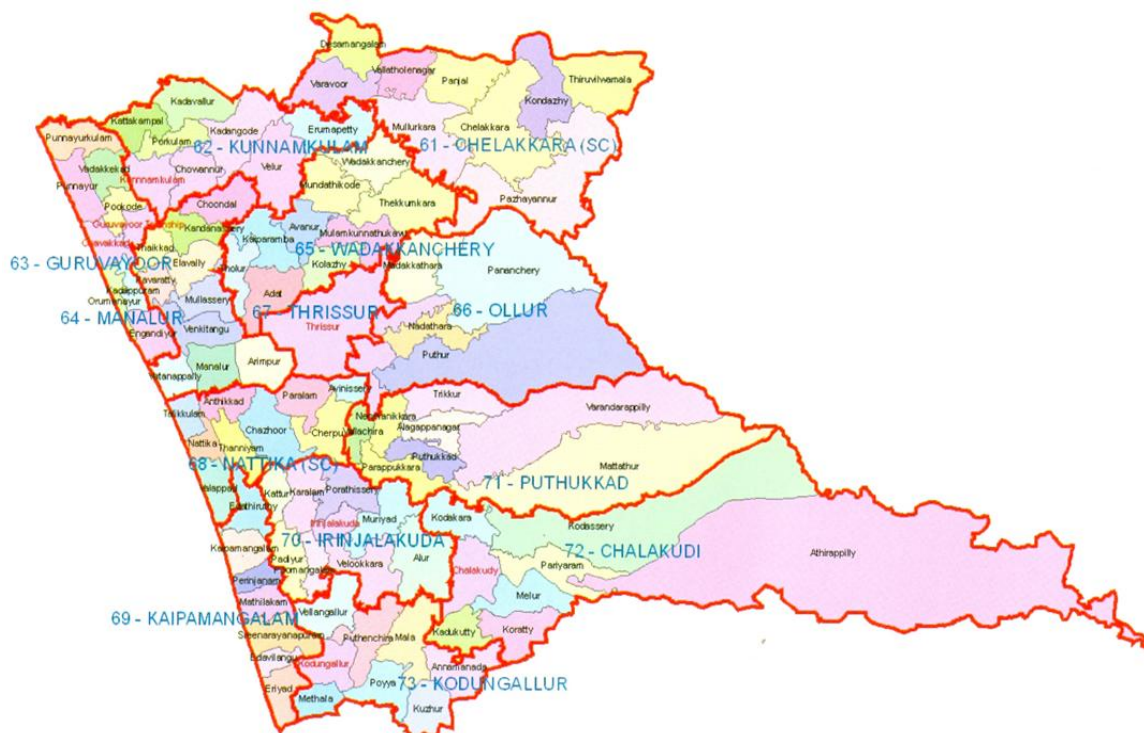
Longitude	76.22	76.65	76.33	76.25
Actual Population	3121200	2809934	2127789	33406061
Male	1480763	1359478	1013142	16027412
Female	1640437	1450456	1114647	17378649
Population Growth	4.94	7.35	0.88	4.91
Area Sq. Km	3027	4482	1415	38852
Density/km2	1031	627	1504	860
Sex Ratio (Per 1000)	1108	1067	1100	1084
Average Literacy	95.08	95.72	89.31	94
Male Literacy	96.78	93.10	97.36	96.11
Female Literacy	93.56	85.79	94.24	92.07
Total workers	35.11	37.09	37.81	34.78
Main workers	29.78	31.16	28.03	80.30
Marginal workers	5.33	5.94	9.78	19.70
Cultivators	3.81	6.51	3.14	5.47
Agricultural Labourers	6.75	23.98	8.91	59.63
Workers in household	2.54	2.40	4.46	8.23
Other workers	86.89	67.11	83.49	82.12
Forest	103619	136257	0	1081509
Net area sown	127185	196818	87445	2071507
Area sown more than once	34031	106643	21044	575954
Total cropped area	161216	303461	108489	2647461
Major crops	Paddy, Tapioca, Coconut, Banana, Rubber, Areca nut, etc...	Paddy, Tapioca, Ginger, Coconut, Banana, Rubber, Areca nut, Vegetables etc...	Paddy, Coconut, Banana, Tapioca, Areca nut, etc...	Paddy, Tapioca, Coconut, Banana, Rubber, Cardamom, Areca nut, etc...

Source: District Census Handbook, Village and Town wise Primary Census Abstracts, Directorate of Census Operations, Kerala (2011 Census)

## 4.2 Profile of the region

### 4.2.1 Thrissur District

The central part of Kerala, the district of Thrissur was officially formed on July 1, 1949 with a total geographical area of 186944hectare. It covers 4.8 percent of the total geographical area of the state. The district is the home to over 10 percent of the Kerala's population. Sakthan Thampuran was famously known as the architect of Thrissur district. The boundary of the total geographical area of the district is covered by Malappuram and Palakkad districts in the north; Ernakulum and Idukki in the south; Arabian Sea in the west; and Palakkad and Coimbatore district of Tamil Nadu in the east. The headquarters of the district is Thrissur city. The city is located in and around Thekkinkadu Maidan created under the guidance of Sakthan Thampuran. The location profile of the district shows that north altitude is in between 10 degree 10' and 10 degree 46' and east longitude is in between 75 degree 57' and 76 degree 54'.The district is popularly known as the cultural capital of Kerala and the land of poorams. The initial name of the district was 'Thrisivaperur' which means the holy land of lord Siva.



There are five taluks and 255 villages in the district. The five taluks are Thrissur, Kodungallur, Mukundapuram, Chavakkad, and Thalappilli. In the urban area of the district there are seven local bodies. They are Thrissur Corporation, Chalakkudy, Irinjalakuda, Kodungallur, Chavakkad, Guruvayur and Kunnankulam municipalities. In the rural areas there exist three tier panchayati raj systems consisting of 88 Grama panchayats at village level, 16 block Panchayath and 1 district Panchayath. A religion wise analysis of the district reveals that the population consists of Hindu, Christian and Muslim. As per 2011 census, Hindu consists of 59.24%, followed by Christians, 24.21% and remaining belongs to Muslim category.

Among the coastal districts, Thrissur district ranks the third in area and the district ranks 5<sup>th</sup> in area among the districts. In terms of population per sq.km, the district recorded 7<sup>th</sup> position (1031) as against state density (860). The district recorded 9<sup>th</sup> rank in total (35.1 per cent) and 10<sup>th</sup> position in female work participation rate (18.7 per cent) and 7<sup>th</sup> rank in male work participation rate (53.3 per cent). The marginal work participation rate of the district is 15.2 per cent. The district occupies 2<sup>nd</sup> rank in the percentage of main workers 84.8 per cent. With 95.08 per cent, the district occupies the 7<sup>th</sup> position in literacy rate. The district recorded 4<sup>th</sup> rank in sex-ratio (1108). In child sex-ratio (0-6 age-group), the district recorded the 14<sup>th</sup> position (950). With 10.67 per cent, Thrissur has the 4<sup>th</sup> position in the percentage of SC population and 12<sup>th</sup> position in the case of ST population (1.94 per cent). 6.7 per cent of workers are agricultural labours occupying 13<sup>th</sup> rank and the district occupies the 11<sup>th</sup> Position in the percentage of cultivators (3.8 per cent). With a population of 3121200 persons, the district stands 4<sup>th</sup> place in the state. (District Census Hand Book, Thrissur, 2011).

The details of mountains in the district show that Machad hills belong to Thalappilli taluk, Paravattani hill in Thrissur taluk, Palappilly, Kodassery and Athirappilly hills at Mukundapuram taluk. The highest point in Thrissur district is Vilangan hills. The major rivers in this district are Bharathapuzha, Kecheripuzha, Karuvannurpuzha and Chalakkudypuzha. The longest river in the district is Chalakkudypuzha. Thrissur is not far away from the presence of lakes. The district

consists of major fresh water lakes such as Manakkody Lake in Thrissur taluk, Thanneer Kayal in Chavakkad taluk, Muriyad lake, Kattakampal and Mullur Kayal in Thalappilli taluk.

Thrissur is an agrarian district where the land is utilized for the cultivation of paddy, coconut, areca nut, pepper, banana, and vegetables. The climatic conditions are suitable for the production of these crops. The temperature between day and night are more or less same with minor differences. Every year the district gets rainfall on an average of 2500 mm. The summer season of the district is from March to May. From June to September there is south- west monsoon. October and November is characterized by post monsoon season and winter starts from December and ends at February. The major mineral of the district is granite and minor minerals are tile/brick clay and laterite. 34.21 percent of the total area of the district covers forest land and the district collects timber, teak poles, billets, firewood and bamboo.

#### **4.2.2 Palakkad District**

Palakkad, the "Rice bowl of Kerala" formed on January 1<sup>st</sup> 1957. It is an agrarian district with a total area of 4,480 km<sup>2</sup> (1,730 sq mi). The district occupies highest position in Kerala on the basis of total length. As a largest district it covers 11.5% of the state. The initial name of Palakkad was Palakkattussery and it is reformed in to 'Palghat' in the subsequent years. The district headquarter is Palakkad city. The district is the abundant source of Palms and Paddy. A part of the district belonged to Madras Presidency. The boundary particulars are, in the north west of the district, Malappuram district is situated and Thrissur district in the south west of the district. The east border of the district is shared by Coimbatore district of Tamil Nadu and the north east by the Nilgiris district. The latitude of the district is 10.7867 and longitude is 76.6548 respectively. The administrative set up of the district shows that there are two revenue divisions and five taluks in the district. There exist 156 villages, 13 blocks, 91 grama Panchayaths and 4 municipalities under the jurisdiction of the Palakkad district.



As per 2011 census, the total geographical area of the district is 447584 hectares. Among this area, forest covers 136257 hectare, non-agricultural use covers 41410 hectare, uncultivable land covers 2756 hectare, miscellaneous tree crops covers 1023 hectare, cultivable waste covers 24033, net sown area covers 196818, and total cropped area covers 303461 hectares. The majority of people belong to Hinduism and the second position is by Muslims. Christian religion get a third place in the district. There exist other minority religions also. The female population is higher than male population in rural and urban areas as well as among the SC, ST and total population of the district. The literacy rate of the district shows that male literacy is higher than the female literacy.

Even though it is a dry area as its name derives from the word Palanilam, it occupies a good status in the paddy cultivation of the state. The average temperature of the district is  $27.8^{\circ}\text{C}$  annually. The main occupation of the people in the district is agriculture. The district has a long gap known as Palakkad gap of 32 to 40 km. The district is therefore prominently known as the Gateway of Kerala. The

major crops under the area are paddy, Coconut, Rubber, Pulses, Areca nut, Tapioca, Ginger, Groundnut, Sugarcane, and Cotton etc. For the cultivation of these major crops the district gets on an average rainfall of 2135 mm. There are three types of soil in the district; i.e, black soil which is seen in the areas of Chittur and Attappady, laterite soil, which is seen in the areas of Alathur, Chittur and Ottaplum and virgin forest soil in Mannarkad area and the fertility of the soil in the district has maintained the name the district as the Granaries of Kerala. Palakkad is the only district in the state where Cotton and Groundnut are cultivated.

Among the districts, Palakkad District ranks 1<sup>st</sup> in area (4482 Sq.km). The district recorded 13<sup>th</sup> position in the literacy rate (89.31 per cent). In Density, the district occupies 11<sup>th</sup> position (627). The district has 5 Taluks, 4 Statutory Towns, 17 Census Towns, 13 Community Development Blocks and 91 Panchayaths. In the percentage of Scheduled Caste Population to total population (14.37per cent), the district ranks 1<sup>st</sup> in the state. In child sex ratio (0-6 age group) the district has recorded the 5<sup>th</sup> position in the State. The urban density of Palakkad (4692 sq.km) is lower than that of State urban Density (4900). Palakkad occupies the 3<sup>rd</sup> position among the districts in the share of agricultural labours. The district recorded the 7<sup>th</sup> rank in total, 5<sup>th</sup> female work participation rate (20.42 per cent) and 54.88 per cent in male work participation rate which denotes 4<sup>th</sup> position. In urban and rural work participation rate (34.79 per cent and 37.83 per cent), the district occupies the 7<sup>th</sup> place in rural and 5<sup>th</sup> place in urban. The district holds the 11<sup>th</sup> rank in work participation rate of marginal workers (16.00 per cent). Palakkad stands at the 4<sup>th</sup> position in the percentage of main workers (83.99 per cent). In sex-ratio, the district occupies the 10<sup>th</sup> position (1067). Palakkad district is called the ‘rice bowl’ of Kerala on account of its net sown area under paddy cultivation. Silent Valley national park in the district is a unique preserve of tropical rain forest with an almost unbroken ecological history (District Census Hand Book, Thrissur, 2011).

The tourism in the district attracts a large number of foreign as well as domestic tourists and contributed much more to the tourism revenue collections of the state. The major tourist places in the district are Palakkad Fort,



Malampuzha dam garden, Silent Valley National Park, Anjumoorthy temple, Parambikulam Wildlife Sanctuary, Killikkurussimangalam, Attappady, Nelliampathi, Sholayar, etc. The major rivers in the district are Bharathapuzha, Gayathripuzha, Kannadipuzha, Kalpathypuzha, Thoothapuzha, Bhavanipuzha and Kunthipuzha.

#### **4.2.3 Alappuzha District**

The smallest district in Kerala was established on 17<sup>th</sup> August 1957 with a total area of 1414 sq.kms, i.e., 3.64 % of the total area of the state. The boundary details show that in the north of the district, Ernakulum district is located. Kollam district is in the south of the district. East is covered together by Kottayam and Pathanamthitta districts and in west the district has Arabian Sea. The district has north latitudes of 9 .05' and 9.54'. The east longitude is 76.17'30" and 70.40'. According to 2011 census it is the densest district of Kerala with a density of 1504 per sq.km. It occupies third position in female literacy rate also. The district is famously known as 'Venice of East'. The district is widely known for tourist destination and well known for coir factories. Most of the Kerala's Coir industries are situated in and around Alappuzha.



The total number of wards under six municipalities of the district is 215 and other 1169 are under the jurisdiction of 73 Grama Panchayaths. Altogether there are 1384 wards operated in this district. The total number of block Panchayath is 12 and there exist a total of 91 local bodies in the district. There are 92 villages in the district. The revenue divisions are Alappuzha and Chengannur. The six taluks are Cherthala, Ambalappuzha, Kuttanad, Karthikappally, Mavelikkara and Chengannur. It is clear that majority of the people are Hindus (68.64%), followed by Christian (20.45%). Muslim is among the minority group of the district. There are 10.55% Muslims in the district. Other categories account for 0.36 %.

Under the Local Self-Government System, the district is divided into 5 Statutory Towns, 12 Development Blocks and 73 Panchayaths. It may be noted that the jurisdiction of the Development Blocks includes the areas falling in Census Towns and Out-growth also. In terms of area, Alappuzha district is the smallest district in the State. The district has the fourth highest effective literacy rate (95.72 percent) and with regard to female literacy rate, it also stands the 4<sup>th</sup> in the State. Alappuzha is the second densest district (1504) in the state in terms of population per sq. km. The district has a higher sex ratio (1100) than the state (1084). Alappuzha is the only district in the state where there are no reserved forests. Kuttanad Taluk, known as the rice bowl of the state, has a predominant position in the production of rice. With 2127789 persons, Alappuzha district ranks 9<sup>th</sup> among the districts of the state in population. In work participation rate (37.81 per cent), the district has the 4<sup>th</sup> position among the districts. Alappuzha district ranks 3<sup>rd</sup> in female work participation rate (24.02 per cent). In child sex ratio, the district has 13<sup>th</sup> rank with 951 female children per 1000 male children. In the percentage of Scheduled Tribe population to total population, the district has the 13<sup>th</sup> rank (0.31 per cent) among the districts. It stands the 7<sup>th</sup> position in the percentage of Scheduled Caste population to total population (9.45 per cent). In the district 74.13 per cent of workers are main workers and 25.87 percent are marginal workers. The district stands the 2<sup>nd</sup> position in the percentage of workers in household industry (4.46 per cent) (District Census Hand Book, Thrissur, 2011).

The major rivers in the district are Pampa, Achankovil, and Manimala. The famous Vembanad and Kayamkulam Lakes are the sole assets of Alappuzha district. Another central feature of the district is it has no forest land under its jurisdiction. Alappuzha is prominently known as Alleppey. The tourism in the district attracts a large number of foreign as well as domestic tourists in the district. The Punnamada Lake of the district attracts tourists in the wake of the famous Nehru trophy boat race started in 1952 and the district is famous for its snake boat race.

Climatic conditions of the district show that in the coastal area there exists moist and hot climate whereas the interior of the district experiences cool and dry climate. The annual average rainfall is 2763 mm. The rain gauge stations in the district are Alappuzha, Ambalappuzha, Kayamkulam, Chengannur, Mavelikkara, Harippad, Cherthala and Arookutty. In between March to May there is hot climate. After that the south-west monsoon starts and continues up to September. October and November show north east monsoon and from December to February there is dry climate situation. The major minerals in the district are glass and foundry sand. Lime shell, China clay and ordinary clay are the other major minerals. The main crops of the district are Paddy, Coconut, Tapioca, Cashew, Pepper, Areca nut etc. In the past period of time, the major exportable items of the district were Coir and coir products, Coconut, Ginger, Pepper and Turmeric, etc.

### **4.3 Profile of the sample Panchayaths**

This section deals with a brief profile of the sample Panchayaths for the study. The segment starts with the overview of the sample area and the socio-economic status of the sample households. Then it proceeds to discuss in depth the focus of concern; i.e; food security in the state. The study mainly focuses on the food basket of rural households in Kerala and identifies the determinants of rural food baskets in the state. The details as the availability, accessibility and affordability of food crops, land use pattern, cropping pattern, sources and purchase of food items, determining factors of the food articles etc. are described in this section.

We look into the brief idea about the sample Panchayaths from Thrissur, Palakkad and Alappuzha districts and it is presented in table 4.2

**Table 4.2**  
**A brief profile of sample areas**

<b>Description</b>	<b>Maattathur</b>	<b>Alanallur</b>	<b>Mulakuzha</b>
Area	103 sq km	58.24 sq km	22.74 sq km
Population	45919	58000	28390
No of males	22274	25225	13091
No of females	23645	27329	15299
Population Density	446 sq km	808 sq km	705 sq km
Literacy Rate	92 %	90%	94.61%
Villages included	Mattathoor Vellikulangara Half of Kodassery	Alanallur 1, 2, 3	Mulakuzha
Block Panchayath	Kodakara	Mannarkad	Chengannur
District Panchayath	Thrissur	Palakkad	Alappuzha
Taluk	Mukundapuram	Mannarkad	Chengannur
No of Wards	23	23	18
Boundaries	Palakkad district and Kodassery grama Panchayath (East) Kodakara and Parapookkara grama Panchayath (West) Kodassery grama Panchayath (North) Varantharappilly grama Panchayath (South)	Kottopadam grama Panchayath (East) Melattoor, Vettathoor grama Panchayath (West) Thazhekkal grama Panchayath (North) Karuvarakund and Edappatta grama Panchayath (South)	Aaranmula and Muzhuvveli grama Panchayath (East) Venmani and Aala grama Panchayath (West) Kulanada and Venmani grama Panchayath (North)
Major Crops	Paddy, Coconut, Banana, Tapioca, Pepper Areca nut, Vegetables etc...	Paddy, Banana, Pepper, Cocoa, Coconut, Areca nut, Vegetables etc	Paddy, Ginger, Coconut, Banana, Pepper, Rubber, Vegetables etc

Source: Development Reports of Panchayaths (2011 Census)

## 4.4 Socio- Economic Profile of Sample Households

Here an attempt is made to describe the socio- economic characteristics of the sample households, namely total sample households, size of the family, gender, religion, education status etc. it is very useful for the justification of the objective of the study.

### I. General Information

#### Economic Category

**Table 4.3**  
**Distribution of the respondents based on economic category**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
AAY	(0)	2 (1.19)	1 (0.55)	3 (0.59)
APL	121 (75.63)	128 (76.19)	134 (74.03)	383 (75.25)
BPL	39 (24.38)	38 (22.62)	46 (25.41)	123 (24.17)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.3 represents the percent share of the sample households according to the economic category which they are belonging. It is clear from the table that the majority of the sample households (75.25percent) belong in the category of APL. Across districts, BPL category constitutes 24.17 percent. AAY category has shown very lean across the districts. In the category of APL, Palakkad district (76.19 percent) occupies highest across districts.

#### Type of family

**Table 4.4**  
**Distribution of the respondents based on type of family**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Joint Family	5 (3.13)	14 (8.33)	(0)	19 (3.73)
Nuclear family	155 (96.88)	152 (90.48)	181 (100)	488 (95.87)
Others	(0)	2 (1.19)	(0)	2 (0.39)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

The sample households were classified on their family size in different districts presented in table 4.4. The average number of family members belongs to nuclear family. On these, Thrissur (100 percent) occupies highest number in the case of nuclear family. Palakkad district (8.33 percent) occupies highest in the case of Joint Family.

**Table 4.5**  
**Period of stay at home**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Daily	158 (98.75)	165 (98.21)	180 (99.45)	503 (98.82)
Weekly	1 (0.63)	2 (1.19)	1 (0.55)	4 (0.79)
Monthly	1 (0.63)	1 (0.6)	(0)	2 (0.39)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.5 illustrates the members in the family who stay house always. In the study, there are three categories namely, daily, weekly and monthly. From these, the category named daily has attained highest (98.82 percent) across the districts. But in the case of monthly category, the same was only 0.3 percent of the total.

### **Religion**

**Table 4.6**  
**Religion wise classification**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Hindu	82 (51.3)	75 (44.6)	61 (33.7)	218 (42.8)
Muslim	61 (38.1)	77 (45.8)	1 (0.6)	139 (27.3)
Christian	16 (10)	13 (7.7)	118 (65.2)	147 (28.9)
Others	1 (0.6)	3 (1.8)	1 (0.6)	5 (1)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Religion wise distribution of the sample households is given in table 4.6. Most of the sample households in Thrissur district belong to Christian religion (65.2 percent). Hindu religion (51.3 percent) is highest percent in Alappuzha

district. But almost 45.8 percent of the sample households in Palakkad district belong to Muslim religion. Hence there is a dominance of specific religion across the sample districts.

### Social group

**Table 4.7**  
**Social group wise classification**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
General	40 (25)	34 (20.2)	121 (66.9)	195 (38.3)
SC	24 (15)	13 (7.7)	20 (11)	57 (11.2)
ST	1 (0.6)	1 (0.6)	0 (0)	2 (0.4)
OBC	95 (59.4)	116 (69)	40 (22.1)	251 (49.3)
Others	0 (0)	4 (2.4)	0 (0)	4 (0.8)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Caste wise distribution of the sample households is given in table 4.7. Among the sample districts, majority of the sample households belongs to OBC category (49.3 percent). The percentage of ST population is negligible in Thrissur district. Where, the SC/ ST population is very low across the sample districts.

### Occupational status

**Table 4.8**  
**Occupational status of the head of the household**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Agricultural Labour	9 (5.6)	12 (7.1)	28 (15.5)	49 (9.6)
Coolie Worker	51 (31.9)	50 (29.8)	93 (51.4)	194 (38.1)
Govt.	27 (16.9)	24 (14.3)	11 (6.1)	62 (12.2)
Private	6 (3.8)	10 (6)	7 (3.9)	23 (4.5)
Professional	0 (0)	0 (0)	1 (0.6)	1 (0.2)
Self employed	33 (20.6)	44 (26.2)	32 (17.7)	109 (21.4)
Others	33 (20.6)	27 (16.1)	9 (5)	69 (13.6)
Agricultural Labour & Coolie worker	1 (0.6)	0 (0)	0 (0)	1 (0.2)
Agricultural Labour & Professional	0 (0)	1 (0.6)	0 (0)	1 (0.2)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.8 illustrates the occupational status of the sample households across the districts. Occupational status is categorized into five. They are, Agricultural Labour, Coolie Worker, Government employees, Private employees, Professional employees, Self employees and others. From the survey, it is found that, most of the sample households belong to Coolie workers (38.1 percent). Among these, highest in this employment goes to Thrissur district (51.4 percent). Only 9.6 percent of sample households are engaged as agricultural labours.

### **Source of Income**

The discussion on sources of income of the sample households is presented in table 4.9. The sources of income are categorized into 7; they are cultivation, farming, other agricultural activity, salary/wage, pension, remittances and others. Most of the sample households are included in salary/wage category (67.19 percent). The next is from other category (12.77 percent). A few is from a category of other than agricultural activity (1.18 percent).

**Table 4.9**  
**Source of Income**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Cultivation	6 (3.75)	6 (3.57)	19 (10.5)	31 (6.09)
Farming	2 (1.25)	5 (2.98)	7 (3.87)	14 (2.75)
Other Agricultural Activity	1 (0.63)	2 (1.19)	3 (1.66)	6 (1.18)
Salary/Wage	101 (63.13)	104 (61.9)	137 (75.69)	342 (67.19)
Pension	9 (5.63)	3 (1.79)	3 (1.66)	15 (2.95)
Remittances	5 (3.13)	14 (8.33)	3 (1.66)	22 (4.32)
Cultivation & Farming	1 (0.63)	(0)	1 (0.55)	2 (0.39)
Cultivation & Salary/Wage	(0)	1 (0.6)	(0)	1 (0.2)
Farming & Salary/Wage	1 (0.63)	(0)	1 (0.55)	2 (0.39)
Other Agricultural Activity & Salary/Wage	1 (0.63)	1 (0.6)	(0)	2 (0.39)
Salary/Wage & pension	(0)	2 (1.2)	2 (1.1)	4 (0.80)
Pension & Others	1 (0.63)	(0)	(0)	1 (0.2)



Cultivation, Farming & pension	(0)	(0)	1 (0.55)	1 (0.2)
Farming, Salary/Wage & pension	1 (0.63)	(0)	(0)	1 (0.2)
Others	31 (19.38)	30 (17.86)	4 (2.21)	65 (12.77)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

### **Type of Structure**

Table 4.10 clearly depicts the structure of sample households. The type of structure is categorized into Katcha, Semi Pucca, and Pucca. Most of the sample households belong to pucca structure across the sample districts (54.62 percent). Among these, Alappuzha holds the majority of these structures (60 percent). The next is from semi pucca (41.85 percent) across districts, and very small structure of kutchha has seen across the sample districts.

**Table 4.10**

#### **Type of Structure of the house**

<b>Structure</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Katcha	5 (3.13)	3 (1.79)	10 (5.52)	18 (3.54)
Semi Pucca	59 (36.88)	73 (43.45)	81 (44.75)	213 (41.85)
Pucca	96 (60)	92 (54.76)	90 (49.72)	278 (54.62)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

## **II. Demographic Details**

### **Gender wise classification**

**Table 4.11**

#### **Gender wise classification of the members in the selected sample households**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Female	307 (46.73)	310 (46.41)	353 (47.32)	970 (46.84)
Male	350 (53.27)	358 (53.59)	393 (52.68)	1101 (53.16)
Grand Total	657 (100)	668 (100)	746 (100)	2071 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.11 represents the percentage share of sample households according to gender. It is clear from the table that the majority of the sample households (53.16 percent) are males from each district. Across districts, large proportion of male households (53.59 percent) is composed in Palakkad. Among the 46.84 percent of the female population in sample households across the districts, Thrissur dominates 47.32 percent in the case of female category.

### **Age wise classification**

Age wise classification is shown in table 4.12. Most of the sample households are in the category of age group of 16-30 categories (31.43 percent) across the districts and it has shown highest in Palakkad district (34.58 percent). Only 1.69 percent of the farmers were in the age group of above 75. 17.14 percent of the sample households belong to the category of below 15 age group. All the other sample households are in the age group between 31-75.

**Table 4.12**

#### **Age wise classification of the members in the selected sample households**

<b>Category</b>	<b>Thrissur</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Below 15	88 (13.39)	116 (17.37)	151 (20.24)	355 (17.14)
16-30	219 (33.33)	231 (34.58)	201 (26.94)	651 (31.43)
31-45	146 (22.22)	171 (25.6)	200 (26.81)	517 (24.96)
46-60	157 (23.9)	128 (19.16)	121 (16.22)	406 (19.6)
61-75	34 (5.18)	19 (2.84)	54 (7.24)	107 (5.17)
Above 75	13 (1.98)	3 (0.45)	19 (2.55)	35 (1.69)
Grand Total	657 (100)	668 (100)	746 (100)	2071 (100)

Source: Primary Survey, Note: Values in brackets are percentages

## Marital Status

**Table 4.13**

### **Marital Status of the members in the selected sample households**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Married	367 (55.86)	371 (55.54)	405 (54.29)	1143 (55.19)
Separated	(0)	1 (0.15)	(0)	1 (0.05)
Unmarried	288 (43.84)	290 (43.41)	330 (44.24)	908 (43.84)
Widowed	2 (0.3)	6 (0.9)	11 (1.47)	19 (0.92)
Grand Total	657 (100)	668 (100)	746 (100)	2071 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.13 explains the marital status of the sample households across the districts. Most of the sample households are in the married category (55.19 percent) across districts. 0.92 percent of the sample households fall in the widowed category.

## Education Status

**Table 4.14**

### **Education Status of the members in the selected sample households**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Illiterate	14 (2.13)	17 (2.54)	18 (2.41)	49 (2.37)
Primary	155 (23.59)	169 (25.3)	332 (44.5)	656 (31.68)
Secondary	186 (28.31)	145 (21.71)	179 (23.99)	510 (24.63)
Higher Secondary	121 (18.42)	129 (19.31)	89 (11.93)	339 (16.37)
Graduation	144 (21.92)	160 (23.95)	113 (15.15)	417 (20.14)
post-Graduation & above	37 (5.63)	48 (7.19)	15 (2.01)	100 (4.83)
Grand Total	657 (100)	668 (100)	746 (100)	2071 (100)

Source: Primary Survey, Note: Values in brackets are percentages

The Education profile of the sample households across the districts is presented in table 4.14. Majority of the sample households were with

primary education across the districts (31.68 percent). Primary education is highest in Thrissur district (44.5 percent). Across the districts, the numbers of illiterate is high in Palakkad district (2.54 percent). 24.97 percent of the sample households belong to the category of graduation and post graduation across the districts.

### **Family Income**

**Table 4.15**  
**Classification of households according to Family Income**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Up to 5000	2 (1.24)	1 (0.6)	2 (1.11)	5 (0.98)
5001-15000	27 (16.77)	24 (14.29)	10 (5.56)	61 (11.98)
15001-25000	57 (35.4)	93 (55.36)	120 (66.67)	270 (53.05)
25001-35000	41 (25.47)	36 (21.43)	37 (20.56)	114 (22.4)
35001-45000	21 (13.04)	5 (2.98)	7 (3.89)	33 (6.48)
45001-55000	1 (0.62)	5 (2.98)	3 (1.67)	9 (1.77)
55001-65000	5 (3.11)	1 (0.6)	(0)	6 (1.18)
Above65000	7 (4.35)	3 (1.79)	1 (0.56)	11 (2.16)
<b>Grand Total</b>	<b>161 (100)</b>	<b>168 (100)</b>	<b>180 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.15 classifies based on the family income across the districts. There is an increase in the category of Rs.15001-25000 (53.05 percent), and also a decrease in the category of up to Rs. 5000 as 0.98 percent. From the study, it is found that, Thrissur has secured highest position in the classification of households according to family income across the districts.

### **Pension**

Table 4.16 represents the classification according to the pension received among the sample households across the districts. Among the category, only 2 percent of the population received pension and majority of the persons are still employed in various sectors. Palakkad district holds the top position in the employment creation among various sectors (98.5 percent).

**Table 4.16**  
**Classification according to the pension received**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
NIL	637 (96.96)	658 (98.5)	732 (98.12)	2027 (97.88)
Up to 1000	15 (2.28)	7 (1.05)	7 (0.94)	29 (1.4)
1001-2000	(0)	1 (0.15)	2 (0.27)	3 (0.14)
2001-3000	(0)	1 (0.15)	(0)	1 (0.05)
4001-5000	2 (0.3)	(0)	1 (0.13)	3 (0.14)
Above 5000	3 (0.46)	1 (0.15)	4 (0.54)	8 (0.39)
<b>Grand Total</b>	<b>657 (100)</b>	<b>668 (100)</b>	<b>746 (100)</b>	<b>2071 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

### **III. Availability Information**

**Table 4.17**  
**Land owned in Cents**

<b>Land Owned</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Nil	0 (0)	0(0)	1 (0.6)	1 (0.02)
Up to 5	38 (23.75)	54 (32.14)	28 (15.47)	120 (23.58)
6-20	77 (48.13)	78 (46.43)	103 (56.91)	258 (50.69)
21-40	31 (19.38)	18 (10.71)	34 (18.78)	83 (16.31)
41-60	5 (3.13)	8 (4.76)	13 (7.18)	26 (5.11)
61-80	5 (3.13)	6 (3.57)	2 (1.1)	13 (2.55)
81-100	3 (1.88)	4 (2.38)	1 (0.55)	8 (1.57)
above 100	1 (0.63)	(0)	(0)	1 (0.2)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Land owned by the sample households is presented in table 4.17. Most of the sample households have their own land. Out of the 509 sample households, 490 households have their own land and very small percentage of people stayed in rented houses. Almost 96 percentage of people have their own land and

among these, Palakkad district households was higher the proportion in terms of own land. The highest land owned by the category of 6-20 cents (50.69 percent), and the least land owned by above 100 (0.2 percent). In this category, Thrissur has secured highest position in land owned classification.

**Table 4.18**  
**Households utilizing Land for Agricultural Purpose**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	89 (55.63)	122 (72.62)	117 (64.64)	328 (64.44)
Yes	71 (44.38)	46 (27.38)	64 (35.36)	181 (35.56)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.18 classifies the household utilizing land for agricultural purposes across the districts. Most of the sample households across the districts (64.44 percent) are not utilizing land for agricultural purposes. Land used for agricultural purposes has only 35.56 percent among the sample households. Of these, Alappuzha district (44.38 percent) occupies the highest utilization of the land for agricultural purposes.

**Table 4.19**  
**Utilization of Land**

<b>Use of Land</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Cultivation	16 (10)	2 (1.2)	7 (3.9)	25 (4.9)
Housing	131 (81.9)	132 (78.6)	134 (74)	397 (78)
Both	13 (8.1)	34 (20.2)	40 (22.1)	87 (17.1)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Land utilization in the sample households is presented in table 4.19. It reveals that, majority of the sample households are using their land for construction purposes. Majority of the households build their houses in their own

land, and there are no space and time for cultivation activities. While analyzing across the districts, the picture reveals that very negligible portion use their land for cultivation purposes; it is almost below 5 percent and some others use their land for both housing and cultivation. After their need as housing purposes, the remaining space is used for their daily needs. 17 percent of the households utilize their land in housing and cultivation purposes. Among the districts, the people in Alappuzha are using their land mostly in housing purposes (82 percent).

**Table 4.20**  
**Obtain Essential Food Items Easily**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	12 (7.5)	22 (13.1)	(0)	34 (6.68)
Yes	148 (92.5)	146 (86.9)	181 (100)	475 (93.32)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Majority of the sample households obtain their food items easily, as shown in table 4.20. The study among the sample households regarding the easily attainability of the food items reveals that, almost 93 percent of the people is having positive attitude regarding the matter. Among these, the people in Thrissur district obtain essential food items easily and they have simply accessible the essential food items. This reveals that, due to public intervention and other private outlets solved the difficulty in the obtainability of the food items.

**Table 4.21**  
**Have Mortgage in Land**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	156 (97.5)	156 (92.86)	173 (95.58)	485 (95.28)
Yes	4 (2.5)	12 (7.14)	8 (4.42)	24 (4.72)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.21 represents that there is mortgage in land among the sample households. While analyzing the respective argument, it still reveals that majority of the sample households across the districts was not in any legal agreement in land by which a bank, building society, money lenders etc and only 5 percent of the sample population are involved in this practice.

**Table 4.22**

**Have Lease in Land**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	153 (95.63)	161 (95.83)	177 (97.79)	491 (96.46)
Yes	7 (4.38)	7 (4.17)	4 (2.21)	18 (3.54)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.22 represents that there is any lease in land among the sample households. While analyzing the respective argument, it still reveals that majority of the sample households across the districts was not at all legal agreement in land by which a bank, building society, money lenders etc and only 5 percent of the sample population are involved in this practice.

**Table 4.23**

**Acquiring Enough Quantity of Food**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	9 (5.63)	16 (9.52)	4 (2.21)	29 (5.7)
Yes	151 (94.38)	152 (90.48)	177 (97.79)	480 (94.3)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.23 explains the acquirement of enough quantity of food for all the time. Almost 94 percent of the population has the opinion that they have acquired enough quantity of food at all times and it is mostly seen in Thrissur district. Only very few percent of population is against this argument.



**Table 4.24****Able to deal with sufficient food for all the members in the family from family income**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
No	15 (9.38)	19 (11.31)	4 (2.21)	38 (7.47)
Yes	145 (90.63)	149 (88.69)	177 (97.79)	471 (92.53)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Among the sample households, majority of the people are able to deal with sufficient food for all the members in the family from family income. Only 7 percent of the people in the sample areas are not able to deal with sufficient food (Table 4.24).

**Table 4.25**  
**Source of purchase of food items**

Food items	Own production	Purchased by own money	Purchased on credit	Receiving food as part wage	PDS	Others
Rice & Rice Pdts	20 (2.74)	464 (63.65)	1 (0.14)	1 (0.14)	243 (33.33)	0 (0)
wheat & Wheat Pdts	0 (0)	413 (66.51)	1 (0.16)	0 (0)	207 (33.33)	0 (0)
Pulses & Pulse Pdts	8 (1.66)	468 (97.10)	5 (1.04)	0 (0)	0 (0)	1 (0.21)
Salt & Spices	5 (1.09)	451 (98.69)	1 (0.22)	0 (0)	0 (0)	0 (0)
Sugar	0 (0)	475 (99.37)	3 (0.63)	0 (0)	0 (0)	0 (0)
Cereals	4 (1.6)	244 (97.6)	1 (0.4)	0 (0)	0 (0)	1 (0.4)
Milk & Milk Pdts	50 (11.9)	344 (81.9)	1 (0.24)	0 (0)	0 (0)	25 (5.95)
Edible Oil	44 (10.4)	378 (89.36)	1 (0.24)	0 (0)	0 (0)	0 (0)
Tapioca	78 (20.63)	297 (78.57)	3 (0.79)	0 (0)	0 (0)	0 (0)
Fruits & Nuts	34 (10.93)	266 (85.53)	2 (0.64)	9 (2.89)	0 (0)	0 (0)
Meat Egg Fish	12 (2.76)	420 (96.55)	1 (0.23)	1 (0.23)	0 (0)	1 (0.23)
Vegetables	108 (21.34)	397 (78.46)	1 (0.2)	0 (0)	0 (0)	0 (0)
Roots & Tubers	71 (38.59)	111 (60.33)	1 (0.54)	1 (0.54)	0 (0)	0 (0)
Beverages	2 (5.26)	33 (86.84)	2 (5.26)	1 (2.63)	0 (0)	0 (0)
Miscellaneous Pdts	0 (0)	37 (94.87)	1 (2.56)	1 (2.56)	0 (0)	0 (0)

Source: Primary Survey, Note: Values in brackets are percentages

The sources of purchase of food items are shown in table 4.25.

The major sources are own production, purchased by own money, purchased on credit, receiving food as a part of wage, PDS and others. On these sources of food items, majority of the sample households purchased their requirements of food items from open market using their own money and also the households mostly depend on

Public Distribution system. Rice, wheat, sugar and kerosene are the main products distributed through the PDS in Kerala and in the majority of the people in the sample households are buy rice and wheat through PDS (almost 67 percent).

Table 4.26 illustrates the availability of food items in the market and it signifies as easy, tough, fairly and others. Most of the sample households in the state are of the opinion that majority of the food grains are easily available in the market and the households satisfy their daily needs very efficiently and only small part of the people in the sample households are not in favour of this view.

**Table 4.26**  
**Availability of food items**

<b>Food items</b>	<b>Easy</b>	<b>Tough</b>	<b>Fairly</b>	<b>Others (No Opinion)</b>
Rice & Rice Pdts	485 (95.3)	9 (1.8)	15 (2.9)	(0)
wheat & Wheat Pdts	463 (91)	5 (1)	17 (3.3)	24 (4.7)
Pulses & Pulse Pdts	463 (91)	42 (8.3)	11 (2.2)	23 (4.5)
Salt & Spices	454 (89.2)	6 (1.2)	4 (0.8)	48 (9.4)
Sugar	471 (92.5)	6 (1.2)	6 (1.2)	26 (5.1)
Cereals	241 (47.3)	13 (2.6)	1 (0.2)	254 (49.9)
Milk & Milk Pdts	414 (81.3)	6 (1.2)	3 (0.6)	86 (16.9)
Edible Oil	421 (82.7)	5 (1)	1 (0.2)	82 (16.1)
Tapioca	359 (70.5)	7 (1.4)	1 (0.2)	142 (27.9)
Fruits & Nuts	289 (56.8)	6 (1.2)	3 (0.6)	211 (41.5)
Meat Egg Fish	404 (79.4)	11 (2.2)	13 (2.6)	81 (15.9)
Vegetables	413 (81.1)	7 (1.4)	4 (0.8)	85 (16.7)
Roots & Tubers	151 (29.7)	8 (1.6)	4 (0.8)	346 (68)
Beverages	28 (5.5)	5 (1)	5 (1)	471 (92.5)
Miscellaneous Pdts	32 (6.3)	6 (1.2)	1 (0.2)	470 (92.3)

Source: Primary Survey, Note: Values in brackets are percentages.

Table 4.27 explains the average quantity of each food item purchased and consumed per month and also percentage quantity consumed across the districts. Most of the food items are consumed by the households from the markets and consumed up to their requirements. In the case of some of the food items, the quantity purchased is less in quantity and quantity consumed is high in quantity and the gap between the quantity purchased and quantity consumed are adjusted by the households through their own production in their land areas. The consumption of vegetables is as more than hundred percentage; i.e, the quantity consumed is more than the quantity purchased.

**Table 4.27****Average quantity of each food items purchased and consumed per month and also percentage quantity consumed**

Food items	Alappuzha			Palakkad			Thrissur			Total		
	QP	QC	Consumption (%)	QP	QC	Consumption (%)	QP	QC	Consumption (%)	QP	QC	Consumption (%)
Rice & Rice Pdts	23.53	19.27	81.9	27.03	25.74	95.23	23.98	23.57	98.29	24.84	22.93	92.31
wheat & Wheat Pdts	4.26	3.92	92.02	4.27	4.11	96.25	3.88	3.86	99.48	4.13	3.96	95.88
Pulses & Pulse Pdts	2.3	2.14	93.04	2.29	2.15	93.89	2.97	2.93	98.65	2.53	2.42	95.65
Salt & Spices	1.75	1.59	90.86	1.7	1.55	91.18	1.66	1.66	100	1.7	1.6	94.12
Sugar	4.48	4.1	91.52	4.76	4.57	96.01	3.9	3.87	99.23	4.36	4.17	95.64
Cereals	0.82	0.72	87.8	0.24	0.2	83.33	0.17	0.17	100	0.38	0.36	94.74
Milk & Milk Pdts	12.91	12.57	97.37	5.31	5.29	99.62	8.4	8.4	100	8.8	8.68	98.64
Edible Oil	3.57	2.33	65.27	2.13	2.04	95.77	2.5	2.5	100	2.69	2.33	86.62
Tapioca	0.91	0.88	96.7	0.78	0.74	94.87	3.29	3.29	100	1.71	1.69	98.83
Fruits & Nuts	1.14	1.1	96.49	0.54	0.52	96.3	0.86	0.83	96.51	0.84	0.81	96.43
Meat Egg Fish	17.57	15.4	87.65	5.99	5.9	98.5	7.09	7.07	99.72	9.99	6.85	68.57
Vegetables	12.4	13.45	108.47	5.2	5.1	98.08	5.61	5.6	99.82	7.57	7.91	104.49
Roots & Tubers	0.37	0.37	100	0.2	0.2	100	1.08	1.04	96.3	0.57	0.55	96.49
Beverages	0.05	0.05	100	0.01	0.01	100	0.01	0.01	100	0.02	0.02	100
Miscellaneous Pdts	0.09	0.09	100	0.03	0.03	100	0	0	0	0.04	0.04	100

Source: Primary Survey, Note: Values in brackets are percentages; QP = Quantity purchased; QC= Quantity Consumed

**Table 4.28****Number of respondents purchasing each food items from different sources**

Items	Local Dealer		Nearby town		Maveli stores		Others	
	No	%	No	%	No	%	No	%
Rice & Rice products	347	68.2	88	17.3	73	14.3	18	3.5
wheat & Wheat products	209	41.1	59	11.6	44	8.6	13	2.6
Pulses & Pulse Pds	302	59.3	38	7.5	79	15.5	19	3.7
Salt & Spices	301	59.1	41	8.1	67	13.2	15	2.9
Sugar	331	65	72	14.1	79	15.5	16	3.1
Cereals	31	6.1	7	1.4	10	2	2	0.4
Milk & Milk Pds	237	46.6	20	3.9	11	2.2	27	5.3
Edible Oil	189	37.1	34	6.7	35	6.9	14	2.8
Tapioca	127	25	10	2	0	0	0	0
Fruits & Nuts	62	12.2	20	3.9	3	0.6	0	0
Meat Egg Fish	335	65.8	31	6.1	0	0	2	0.4
Vegetables	316	62.1	30	5.9	0	0	6	1.2
Roots & Tubers	40	7.9	3	0.6	0	0	0	0
Beverages	3	0.6	1	0.2	0	0	0	0
Miscellaneous Pds	4	0.8	0	0	0	0	0	0

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.28 explains the number of respondents purchasing each food item from different sources. The different sources which the respondents agree that they have purchased their needs from local dealers, nearby towns, Maveli stores and others. Most of the households in the sample area opined that the main sources of purchase of food items are from local dealers. The main food items like rice, wheat, pulses and cereals which are available in the majority of the market places and the supply of these food items are easily accessible to the people in the sample households. The majority of the population in the sample households are using the public distribution channels like PDS, Maveli stores etc for their daily needs.

**Table 4.29****Control on Household Income and Expenditure**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Fully	125 (78.13)	124 (73.81)	167 (92.27)	416 (81.73)
Partially	32 (20)	38 (22.62)	10 (5.52)	80 (15.72)
Rarely	3 (1.88)	6 (3.57)	4 (2.21)	13 (2.55)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.29 exhibits the control of households' income and expenditure among sample households across the districts. Here, the categorization is divided in to three: fully, partially and rarely; among these, most of the sample households are of the opinion that they were fully aware about the market rates and the present position of the economy. Almost 82 percent of the people in the sample households are in full control of their household income and expenditure. Among these, the people in Thrissur district have more control on household income and expenditure (92 percent). Only 16 percent of the population among the sample households partially opined that they have only little control on household's income and expenditure.

**Table 4.30****Able to give Food to family members according to age and condition**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Fully	122 (76.25)	125 (74.4)	176 (97.24)	423 (83.1)
Partially	33 (20.63)	34 (20.24)	1 (0.55)	68 (13.36)
Rarely	5 (3.13)	9 (5.36)	4 (2.21)	18 (3.54)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

The nutritional standard of the people mainly depends upon the food intake and their calorie contents and depend on the age and family conditions of the people in the economy. Here, the discussion is focusing on the ability to give food to family members according to age and condition. In Kerala, most of the people are conscious about the nutritional standards of the family members. Here, almost 83 percent of the people in the sample households are fully conscious about the food items to family members and they are capable to give food to family members according to age and requirement. Among these, the study across the districts shows that the people in Thrissur district are more able to give food to family members according to age compared to other districts. The remaining 17 percent of the population in the sample households are not much keen in this.(table 4.30).

**Table 4.31**

**Have to make obtainable all food items throughout the year**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Fully	110 (68.75)	107 (63.69)	149 (82.32)	366 (71.91)
Partially	47 (29.38)	49 (29.17)	29 (16.02)	125 (24.56)
Rarely	3 (1.88)	12 (7.14)	3 (1.66)	18 (3.54)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

People in the sample households make obtainable pulses, fruits, milk, non-vegetables items, green vegetables etc in family food basket throughout the year. This is shown in table 4.31. Almost 72 percent of the population is fully conscious about the food availabilities and accessibilities and they are very intense to make obtainable all food items to the family members throughout the year. It is very ardent to see in the people of Thrissur district (82 percent). Very little the population is not seriously taken this matter and they have no worry about the accessibility of the food items to the family members throughout the year (table 4.31).

**Table 4.32****Aware about the enough income is essential for household food security**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Fully	120 (75)	122 (72.62)	170 (93.92)	412 (80.94)
Partially	36 (22.5)	38 (22.62)	9 (4.97)	83 (16.31)
Rarely	4 (2.5)	8 (4.76)	2 (1.1)	14 (2.75)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Majority of the people in the sample households are more aware about the financial position of their families for acquiring their basic needs, especially the food needs and they are very much enthusiastic to maintain the food security in the households. Table 4.32 exhibits the awareness among the people in the sample households about whether enough income is essential for household food security. Table shows that almost 81 percent of the population is fully aware of their current financial position to feed their family members and there are some people (16 percent) who are not aware about this. With the available income, they try to maintain the food security of the family members among the sample households.

**Table 4.33****Farming is essential for household food security**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	66 (41.25)	45 (26.79)	50 (27.62)	161 (31.63)
Agree	85 (53.13)	104 (61.9)	114 (62.98)	303 (59.53)
Disagree	5 (3.13)	7 (4.17)	4 (2.21)	16 (3.14)
Strongly Disagree	4 (2.5)	12 (7.14)	13 (7.18)	29 (5.7)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.33 explains the actions of the people in the sample households in farming activities to maintain the household food security. Farming is very essential for an economy for maintaining the food security for all

times. The discussions in the sample households tell us that, 91 percent of the population agrees with this, i.e; farming is necessary for household food security. As we know, in Kerala, the need of the people are increasing in the case of food items, but we are not ready to work in agriculture activities due to many constraints; i.e; non availability of labourer, high cost of raw materials, accessibility of fertile land etc. But, still our 15 percent of the needs are satisfied in production within the state and for remaining 85 percent we depend on other states. So the table clearly depicts the attitude of the people in the sample households. They are aware that farming is essential for household food security, but majority of the people are not ready to work in the farming activities. Only very small part of the population does not agree with the statement that farming is essential for household food security. Among this, people in Thrissur district severely believe that farming is inevitable for food security in the present and also in the future. In this view, people are ready to cultivate the necessary food items, such as vegetables, fruits etc in their courtyards.

**Table 4.34**

**Food articles are easily available**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	33 (20.63)	49 (29.17)	33 (18.23)	115 (22.59)
Yes	127 (79.38)	119 (70.83)	148 (81.77)	394 (77.41)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Most of the households in the sample areas are of the opinion that, they have easily available to our food items. It is shown in table 4.34. It states that, 77 percent of the population is of the opinion that they get enough food articles very easily from different markets. The major food articles in the rural food basket include rice, wheat, cereals, pulses and tapioca. Due to the changes in the cropping pattern, the trends in the production have much transform and it effect the production of basic food items. Due to the imports from other states, the food articles are supplied properly and easily available in the households in the sample area.



**Table 4.35****Money spend in one month for different items**

Items	Alappuzha		Palakkad		Thrissur		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cooking Oil	106.9	100.6	217.7	389.0	82.8	156.7	134.9	255.1
Firewood/ Cooking Fuel	576.4	216.8	584.5	313.3	647.3	223.8	604.3	256.5
Cigarette/Alcohol	0.0	0.0	6.0	42.1	0.0	0.0	2.0	24.3
Drinking Water	12.5	111.5	41.6	104.6	17.7	117.9	23.9	112.1
Education	1822.2	5207.5	2469.4	12074.3	1069.0	2718.6	1767.9	7705.2
Health	926.9	1499.5	965.8	1870.4	833.7	1235.0	906.6	1548.4
Transportation	473.8	846.0	705.4	1390.1	405.3	646.6	525.8	1012.0
Debt Repayment	15428.1	63593.7	8574.4	49067.1	6368.0	34397.5	9944.2	49911.4
House Maintenance	723.1	660.2	635.5	523.9	661.1	487.2	672.1	558.6
Shopping	1425.0	15813.3	356.5	1000.2	176.2	559.6	628.3	8888.4
Farming	86.3	501.3	45.7	285.8	329.8	1143.3	159.5	764.8
Celebrations	238.1	1649.2	193.2	668.2	11.1	148.7	142.5	1007.9
Foods & Beverages	6.3	79.1	181.9	878.5	5.2	68.4	62.0	512.6
Entertainment	73.8	277.8	87.9	410.9	36.7	372.9	65.3	359.7
Others	1.2	12.6	59.4	341.8	2.4	15.0	19.6	198.0

Source: Primary Survey

Table 4.35 explains the money spends monthly for different items among the sample households across the districts. Majority of the households spend their income on education and debt repayment in one month. And next to that, almost half of the incomes they spend on the other activities like health issues and shopping purposes etc. only very small amount the households spend for food and beverages and other activities. In the case of food expenditure, compared that other districts, the people in Palakkad district spend more on food items.

**Table 4.36****Maintains the Stocks of rice or other staple foods**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Strongly Agree	43 (26.88)	22 (13.1)	20 (11.05)	85 (16.7)
Agree	100 (62.5)	89 (52.98)	85 (46.96)	274 (53.83)
Disagree	13 (8.13)	33 (19.64)	62 (34.25)	108 (21.22)
Strongly Disagree	4 (2.5)	24 (14.29)	14 (7.73)	42 (8.25)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.36 illustrates how the people in sample households maintain the stocks of rice or other for their daily bread. Majority of the people agreed that they maintain the stock of rice or other staple foods for their daily needs. Among these the households in Alappuzha district holds the top most priority. Only 8 percent of the people strongly disagree that, they do not maintain the stocks of rice or other staple foods and they purchase the food items on daily basis.

**Table 4.37**

**Activities sustaining (main Activity)**

<b>Activities</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No Activity	(0)	(0)	1 (0.55)	1 (0.2)
Salary/ Wage	129 (80.63)	162 (96.43)	143 (79.01)	434 (85.27)
Agricultural Income	11 (6.88)	2 (1.19)	31 (17.13)	44 (8.64)
Pension	9 (5.63)	2 (1.19)	3 (1.66)	14 (2.75)
Others	11 (6.88)	2 (1.19)	3 (1.66)	16 (3.14)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.37 illustrates that the most important activity sustaining the income in terms of money generated in the last one month. Majority of the people sustain their activities through salary/wage actions. Among these, the people in Palakkad district are more intense in the activities under the category of salary/wage for sustaining the income. Majority of the people in the sample households are dealing with the casual jobs for their daily breads and they earned in the form of wages for their daily works.

**Table 4.38**

**Activities Sustaining (Second Activity)**

<b>Activities</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No Activity	129 (80.63)	154 (91.67)	145 (80.11)	428 (84.09)
Salary/ Wage	4 (2.5)	2 (1.19)	4 (2.21)	10 (1.96)
Pension	4 (2.5)	1 (0.6)	4 (2.21)	9 (1.77)

Agricultural Income	7 (4.38)	8 (4.76)	21 (11.6)	36 (7.07)
Others	16 (10)	3 (1.79)	7 (3.87)	26 (5.11)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.38 explains the second most important activity sustaining the income in terms of money generated in the last one month. Majority of the people sustain their activities through salary/wage actions as a major activity and there is no other activity for sustaining their income. 84 percent of the people do not possess any income other than the main activity. Some people have enjoyed the benefits from agricultural income and pensions for sustaining their requirements.

**Table 4.39**

**Type of Breakfast**

Breakfast	Alappuzha	Palakkad	Thrissur	Grand Total
Chapatti	1 (0.63)	4 (2.38)	1 (0.55)	6 (1.18)
Meals	13 (8.13)	66 (39.29)	26 (14.36)	105 (20.63)
Meals & Chapatti	(0)	1 (0.6)	(0)	1 (0.2)
Meals & Eatables	1 (0.63)	(0)	(0)	1 (0.2)
Eatables	145 (90.63)	97 (57.74)	154 (85.08)	396 (77.8)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

**Table 4.40**

**Type of Lunch**

Lunch	Alappuzha	Palakkad	Thrissur	Grand Total
Meals	160 (100)	168 (100)	180 (99.45)	508 (99.8)
Eatables	(0)	(0)	1 (0.55)	1 (0.2)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

**Table 4.41**  
**Type of Dinner**

<b>Dinner</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Chappathi	42 (26.25)	18 (10.71)	12 (6.63)	72 (14.15)
Meals	77 (48.13)	132 (78.57)	159 (87.85)	368 (72.3)
Chappathi & Meals	39 (24.38)	17 (10.12)	9 (40.97)	65 (12.77)
Eatables	1 (0.63)	1 (0.6)	1 (0.55)	3 (0.59)
Meals& Eatables	1 (0.63)	(0)	(0)	1 (0.2)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Tables 4.39, 4.40 and 4.41 explain the dietary habits of the sample households across the districts. The food items in different periods like breakfast, lunch and dinner and what they prefer more in these time periods. Majority of the households are preferring eatables like idli, dosa, etc. in the breakfast time and on lunch time, they more prefer on meals. In the time of dinner, they prefer both meals and chapattis.

#### **IV. Accessibility and Affordability Information**

**Table 4.42**  
**Transport Facility Available for Sale and Purchase of Food Items**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	39 (24.38)	22 (13.1)	11 (6.08)	72 (14.15)
Agree	119 (74.38)	140 (83.33)	169 (93.37)	428 (84.09)
Disagree	1 (0.63)	3 (1.79)	1 (0.55)	5 (0.98)
Strongly Disagree	1 (0.63)	3 (1.79)	(0)	4 (0.79)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.42 illustrates that the transport facility available for sale and purchase of food items. Almost 84 percent of the people enjoy the benefit of transportation facility for sale and purchase of their food items. Among

these, Thrissur district occupies highest rank in terms of transportation facility in the sample households across the districts and only very few of the population disagree with the facilities of transportation.

**Table 4.43**

**There is Market for Sale and Purchase**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	39 (24.38)	32 (19.05)	5 (2.76)	76 (14.93)
Agree	119 (74.38)	127 (75.6)	175 (96.69)	421 (82.71)
Disagree	2 (1.25)	3 (1.79)	1 (0.55)	6 (1.18)
Strongly Disagree	(0)	6 (3.57)	(0)	6 (1.18)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

There is a platform available for sale and purchase of food items in the sample households across the districts. More than 83 percent of the population agrees that they have an opportunity and there is a market for sale and purchase of food items. Among these, Thrissur district surmounts that, they have sufficient market facilities for sale and purchase of food items and only a small part of the population strongly disagree with the facilities of market for sale and purchase of food items (table 4.43).

**Table 4.44**

**Family is Able to afford all three meals a day**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	79 (49.38)	59 (35.12)	60 (33.15)	198 (38.90)
Agree	77 (48.13)	90 (53.57)	118 (65.19)	285 (55.99)
Disagree	2 (1.25)	11 (6.55)	1 (0.55)	14 (2.75)
Strongly Disagree	2 (1.25)	8 (4.76)	2 (1.1)	12 (2.36)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Among the sample households across the districts, 90 percent of the households are able to afford three meals per day for their family

members and only very few households are not in favour to this. Compared to other districts, the households in Thrissur district are very much able to afford their meals per day. Table 4.44 clearly depicts the capacities of the families in various districts among the sample households. As compared to other districts, the financial status of the people in sample households across districts is very high; so they are able to afford all the three meals a day.

**Table 4.45**  
**Proportion of Income Spent for buying food**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Do not know	21 (13.13)	27 (16.07)	7 (3.87)	55 (10.81)
One third or less	80 (50)	102 (60.71)	138 (76.24)	320 (62.87)
More than one third	59 (36.88)	39 (23.21)	36 (19.89)	134 (26.33)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table explains the proportion of income spent for buying food. The study focuses on the status of the family members of the sample households towards the expenditure pattern among food items. Almost 63 percent of the people in the sample households spend only one third of the income they earn for food items and among these, the people in Thrissur district are very keen to spend their income on food items. There is no distinction of their income in the sample households in any of the food items has seen in a few of the households. What they earn, they spend; this policy was adopted by 10 percent of the households in the sample areas. So they are not aware about, how much income spends for buying food items. 26 percent of the people in the sample households spend more than one third of their income for buying food (table 4.45).

**Table 4.46**  
**Rise in price of food items affected families' intake of food grain**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Strongly Agree	54 (33.75)	27 (16.07)	19 (10.5)	100 (19.65)
Agree	97 (60.63)	125 (74.4)	158 (87.29)	380 (74.66)

Disagree	7 (4.38)	4 (2.38)	3 (1.66)	14 (2.75)
Strongly Disagree	2 (1.25)	12 (7.14)	1 (0.55)	15 (2.95)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Most of the households in the sample districts have positive attitude towards the rise in price of food items affected families intake of food and only very small part of the sample households are not in favour of this argument. When there is a rise in the price of major food items, the people may shift to other substitute food items due to shortage of income. When the price of rice increase in the sample households, the people may shift to chapatti and other related wheat products. The people in Thrissur district sternly agree with the statement of rise in price of food items affected families intake of food (table 4.46).

**Table 4.47**

**Reason for worry to arrange money to purchase family's next meal**

<b>Reason</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No worry	101 (63.13)	86 (51.19)	93 (51.38)	280 (55.01)
Low Income	53 (33.13)	62 (36.9)	78 (43.09)	193 (37.92)
Rising cost of food articles	3 (1.88)	20 (11.9)	10 (5.52)	33 (6.48)
Others	3 (1.88)	(0)	(0)	1 (0.2)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.47 shows the categorization of reasons for worry to arrange the money to purchase families next meal. The reasons are categorized into four: No worry, Low Income, rising cost of food articles and others. Most of the people in the sample households do not have any worry to arrange the next meal for their family members. Almost more than half of the people are efficient to feed the next meal to their family members. But, 38 percent of the people in the sample households face the problem of arranging the money to the next meal of their family members. The nature of employment is not so high and the status of the income of 37

percent of the people is very low as compared to other sample households and they can't afford to buy food articles at the existing prices. So, the people very much worry about the possibilities to feed their family members. There is a small percent of population who worry about their next meal due to the rising cost of food articles.

**Table 4.48**

**Family gets 100 days employment under MGNREG Act 2005**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	22 (13.75)	28 (16.67)	65 (35.91)	115 (22.59)
Agree	23 (14.38)	17 (10.12)	10 (5.52)	50 (9.82)
Disagree	13 (8.13)	39 (23.21)	51 (28.18)	103 (20.24)
Strongly Disagree	102 (63.75)	84 (50)	55 (30.39)	241 (47.35)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

The households in the sample area are not getting 100 days employment under MGNREG Act 2005. The family does not possess any benefits from this act. Almost half of the households were strongly disagreeing that, they do not have any employment opportunities under this act, especially in Alappuzha district. But the households from Thrissur district strongly agreed with the policy and they reap the benefits from this policy (table 4.48).

**Table 4.49**

**Feel that scarcity is a chronic problem**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	29 (18.13)	41 (24.4)	28 (15.47)	98 (19.25)
Agree	59 (36.88)	57 (33.93)	77 (42.54)	193 (37.92)
Disagree	20 (12.5)	20 (11.9)	33 (18.23)	73 (14.34)
Strongly Disagree	52 (32.5)	50 (29.76)	43 (23.76)	145 (28.49)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages



In the sample households, scarcity feels as a main debatable issue. Almost 38 percent of the population agrees that they experienced the problem of scarcity. Among these, the households in Thrissur district mostly agreed with the problem of scarcity, while comparing with other districts. 19 percent of the households strongly agreed that, they feel scarcity as a chronic problem now a days and at the same time 28 percent of the people strongly disagree with the statement. (table 4.49).

**Table 4.50**

**Aware About Market Rates**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Always	68 (42.5)	65 (38.69)	66 (36.46)	199 (39.1)
Never	38 (23.75)	58 (34.52)	52 (28.73)	148 (29.08)
Sometimes	54 (33.75)	45 (26.79)	63 (34.81)	162 (31.83)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.50 checks the awareness about the market rates among the sample households across the districts. Most of the households (39 percent) are always aware about the market rates of food items and behave like rational people. Among these, the people in Alappuzha very cleverly adjusted to their daily food habits according to the market rates compared to other districts. 29 percent of the people do not worry about the market rates; they are ready to buy the food items at any cost.

**Table 4.51**

**Experienced any Food Shortage over the past 12 months**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	118 (73.75)	124 (73.81)	108 (59.67)	350 (68.76)
Yes	42 (26.25)	44 (26.19)	73 (40.33)	159 (31.24)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Most of the sample households have not experienced any food shortage over the past 12 months. For 69 percent of the households' sufficient quantity of food grains is available and only 31 percent of the people face the problem of food shortage over last one year.40 percent of the people in Thrissur district face the problem of shortage of food over the last one year (table 4.51).

**Table 4.52**

**Depend mostly to get the food you needed**

<b>Category</b>	<b>Alappuzha (n=160)</b>	<b>Palakkad (n=168)</b>	<b>Thrissur (n=181)</b>	<b>Grand Total (n=509)</b>
Additional work to get money	113 (70.6)	137 (81.5)	153 (84.5)	403 (79.2)
Borrowed money	125 (78.1)	110 (65.5)	147 (81.2)	382 (75)
Accepting help from friends and relatives	65 (40.6)	49 (29.2)	41 (22.7)	155 (30.5)
Selling some assets or personal household goods	17 (10.6)	12 (7.1)	8 (4.4)	37 (7.3)
Accepting charities	5 (3.1)	2 (1.2)	2 (1.1)	9 (1.8)
Could not do anything	2 (1.3)	2 (1.2)	0 (0)	4 (0.8)
Others	1 (0.6)	2 (1.2)	0 (0)	3 (0.6)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.52 explains the dependency mostly to get the food need among the sample households. When the family does not get enough food to eat, the ways the households depend mostly are explained in table. Among the seven options, the major share of opinion goes to the three categories, i.e; additional work to get money, borrowed money, and accepting help from friends and relatives. Among these three categories, the people in the sample households are more concentrated on the additional work to get money and the borrowed money; and the respondents in the Thrissur district are very familiar with this.

Table 4.53 explains the determining factors of the food articles in the sample households. The major determining factors are income, taste and preferences, interest of the family, availability, convenience, locally grown food, price and others. In accordance with the attitude of the sample households and its preference in, we may state that in the majority of the food items, income is the major determining factor of the food articles in the sample households and the second determining factor for the majority of the sample households is the tastes and preferences. The ranking given in each category depends upon the responses from the sample households. Among the food items, the majority of the people in the sample households rank their preferences through their demand in the food articles and it mainly depends upon the two determining factors, i.e., income, taste and preferences. Price of the food items is the other main determining factor among the sample households for choosing the food articles in accordance with their needs.

#### IV. Specific Information

**Table 4.53**  
**Determining factor of food articles**

Factors/Items		Income	Taste & Preferences	Interest of the Family	Availability	Convenience	Locally Grown Food	Price	Others
Rice and rice products	No (%)	416 (81.7)	354 (69.5)	185 (36.3)	44 (8.6)	17 (3.3)	10 (2)	310 (60.9)	18 (3.5)
	Rank	1	2	4	5	7	8	3	6
wheat and Wheat products	No (%)	331 (65)	350 (68.8)	207 (40.7)	30 (5.9)	9 (1.8)	5 (1)	265 (52.1)	18 (3.5)
	Rank	2	1	4	5	7	8	3	6
Pulses and Pulse products	No (%)	338 (66.4)	325 (63.9)	176 (34.6)	22 (4.3)	4 (0.8)	4 (0.8)	272 (53.4)	17 (3.3)
	Rank	1	2	4	5	7	7	3	6
Salt and Spices	No (%)	325 (63.9)	307 (60.3)	147 (28.9)	26 (5.1)	9 (1.8)	5 (1)	249 (48.9)	18 (3.5)
	Rank	1	2	4	5	7	8	3	6
Sugar	No (%)	335 (65.8)	300 (58.9)	155 (30.5)	24 (4.7)	9 (1.8)	7 (1.4)	233 (45.8)	19 (3.7)
	Rank	1	2	4	5	7	8	3	6
Cereals	No (%)	164 (32.2)	148 (29.1)	68 (13.4)	11 (2.2)	7 (1.4)	4 (0.8)	121 (23.8)	17 (3.3)
	Rank	1	2	4	6	7	8	3	5
Milk and Milk Products	No (%)	219 (43)	227 (44.6)	105 (20.6)	45 (8.8)	7 (1.4)	7 (1.4)	156 (30.6)	15 (2.9)
	Rank	2	1	4	5	7	7	3	6
Edible oil	No (%)	193 (37.9)	178 (35)	67 (13.2)	19 (3.7)	8 (1.6)	8 (1.6)	155 (30.5)	11 (2.2)
	Rank	1	2	4	5	7	7	3	6
Tapioca	No (%)	136 (26.7)	157 (30.8)	50 (9.8)	22 (4.3)	12 (2.4)	7 (1.4)	128 (25.1)	9 (1.8)
	Rank	2	1	4	5	6	8	3	7
Fruits and Nuts	No (%)	130 (25.5)	169 (33.2)	63 (12.4)	13 (2.6)	3 (0.6)	8 (1.6)	134 (26.3)	10 (2)
	Rank	3	1	4	5	8	7	2	6

Meat Egg and Fish	No (%)	247 (48.5)	251 (49.3)	132 (25.9)	19 (3.7)	2 (0.4)	5 (1)	209 (41.1)	7 (1.4)
	Rank	2	1	4	5	8	7	3	6
Vegetables	No (%)	194 (38.1)	181 (35.6)	90 (17.7)	48 (9.4)	3 (0.6)	23 (4.5)	150 (29.5)	11 (2.2)
	Rank	1	2	4	5	8	6	3	7
Roots and Tubers	No (%)	24 (4.7)	29 (5.7)	17 (3.3)	22 (4.3)	8 (1.6)	9 (1.8)	19 (3.7)	0 (0)
	Rank	2	1	5	3	7	6	4	8
Beverages	No (%)	5 (1)	11 (2.2)	14 (2.8)	4 (0.8)	2 (0.4)	1 (0.2)	3 (0.6)	3 (0.6)
	Rank	3	2	1	4	7	8	5	5
Miscellaneous Products	No (%)	5 (1)	5 (1)	8 (1.6)	4 (0.8)	0 (0)	0 (0)	9 (1.8)	3 (0.6)
	Rank	3	3	2	5	7	7	1	6

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.54 explains the constraints experienced in household food security. The major constrained are high cost of food items, lack of storage facility, inadequate marketing facilities, inadequate food availability, poor quality of available food items, cultural inhibition in consumption of some food items, lack of knowledge regarding food security practices, lack of employment opportunities throughout the year and others. Among these, the high cost of food items holds the prime position in the constraints in the household food security (95 percent) and the lack of storage facility is the next constraint in the household food security. The people in the sample households buy their products in accordance with their daily needs and they have no proper facilities for storage of the food items.

**Table 4.54**  
**Constraints experienced in household food security**

Category	Alappuzha (n=160)	Palakkad (n=168)	Thrissur (n=181)	Grand Total (n=509)
High cost of food items	151 (94.38)	155 (92.26)	177 (97.79)	483 (94.89)
Lack of storage facility	46 (28.75)	67 (39.88)	92 (50.83)	205 (40.28)
Inadequate marketing facilities	10 (6.25)	34 (20.24)	92 (50.83)	70 (13.75)
Inadequate food availability	17 (10.63)	15 (8.93)	92 (50.83)	37 (7.27)
Poor quality of available food items	33 (20.63)	21 (12.5)	3 (1.66)	57 (11.2)
Cultural inhibition in consumption of some	10 (6.25)	6 (3.57)	1 (0.55)	17 (3.34)
Lack of knowledge regarding food security	26 (16.25)	13 (7.74)	0 (0)	39 (7.66)
Lack of employment opportunities throughout the year	18 (11.25)	13 (7.74)	9 (4.97)	40 (7.86)
Others	0 (0)	2 (1.19)	0 (0)	2 (0.39)

Source: Primary Survey, Note: Values in brackets are percentages

**Table 4.55****Type of Food Assistance getting from angnawadi**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
No	145 (90.63)	134 (79.76)	155 (85.64)	434 (85.27)
Agricultural Products	3 (1.88)	1 (0.6)	3 (1.66)	7 (1.38)
Amritham Powder	12 (7.5)	27 (16.07)	24 (13.26)	63 (12.38)
Wheat	(0)	5 (2.98)	(0)	5 (0.98)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.55 shows the type of food assistance from anganwadis. Almost 85 percent of the sample households do not possess any benefit from anganwadis. Almost 16 percent of the people in Palakkad district enjoy the benefit of anganwadis.

**Table 4.56****Aware of the government programmes to enhance the food security of the rural poor**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
No	103 (64.38)	126 (75)	158 (87.29)	387 (76.03)
Yes	57 (35.63)	42 (25)	23 (12.71)	122 (23.97)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Awareness of the government programmes to enhance the food security of the rural households is exhibited in table 4.56. Unfortunately, majority of the sample households are not aware of the government programmes across the districts. More than  $\frac{3}{4}$ <sup>th</sup> of the population still have no idea about the policies and programmes of the government and it is very severe in Thrissur district (87.29 percent).

**Table 4.57****Awareness about NFSB for enhancing the food security of the people**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
No	125 (78.13)	134 (79.76)	163 (90.06)	422 (82.91)
Yes	35 (21.88)	34 (20.24)	18 (9.94)	87 (17.09)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.57 shows awareness about the National Food Security Bill for enhancing the food security of the sample households. Most of the people (82.91 percent) are not aware about the national food security schemes and policies and it is more serious in Thrissur district (90.06 percent).

**Table 4.58****Preference of different public intervention based on easily availability of food items**

Public intervention	Alappuzha		Palakkad		Thrissur		Total	
	No (%)	Rank	No (%)	Rank	No (%)	Rank	No (%)	Rank
PDS/ Maveli stores/ Supplyco	119 (74.4)	1	147 (87.5)	1	381 (210.5)	1	647 (127.1)	1
ICDS/ Angnawadi	14 (8.8)	3	5 (3)	4	38 (21)	4	57 (11.2)	4
Mid day meal scheme	10 (6.3)	4	2 (1.2)	5	30 (16.6)	5	42 (8.3)	5
MGNREA	19 (11.9)	2	6 (3.6)	3	45 (24.9)	3	70 (13.8)	2
NFSM	10 (6.3)	4	2 (1.2)	5	14 (7.7)	6	26 (5.1)	6
Kudumbashree	8 (5)	6	9 (5.4)	2	47 (26)	2	64 (12.6)	3
Others	2 (1.3)	7	0 (0)	7	2 (1.1)	7	4 (0.8)	7

Source: Primary Survey, Note: Values in brackets are percentages

Tables 4.58, 4.59, 4.60, 4.61 illustrate the impact/ effectiveness of public intervention on food security. The major impacts are classified into four; easily accessible, affordable price, quick accessible and quality food items



among the major public interventions like PDS/ Maveli stores/ Supplyco, ICDS/ Angnawadi, Mid day meal scheme, MGNREA, NFSM and Kudumbasree. On these preferences of different public interventions, majority of the sample households have the opinion that Public Distribution System is the most effective public intervention on food security across the districts.

**Table 4.59**

**Preference of different public intervention based on affordability in price of food items**

Public intervention	Alappuzha		Palakkad		Thrissur		Total	
	No (%)	Rank	No (%)	Rank	No (%)	Rank	No (%)	Rank
PDS/ Maveli stores/ Supplyco	67 (41.9)	1	63 (37.5)	1	221 (122.1)	1	351 (69)	1
ICDS/ Angnawadi	10 (6.3)	3	4 (2.4)	2	24 (13.3)	2	38 (7.5)	2
Mid day meal scheme	8 (5)	5	2 (1.2)	3	16 (8.8)	5	26 (5.1)	5
MGNREA	12 (7.5)	2	2 (1.2)	3	18 (9.9)	3	32 (6.3)	3
NFSM	0 (0)	6	0 (0)	6	0 (0)	6	0 (0)	6
Kudumbashree	9 (5.6)	4	2 (1.2)	3	18 (9.9)	3	29 (5.7)	4
Others	0 (0)	6	0 (0)	6	0 (0)	6	0 (0)	6

Source: Primary Survey, Note: Values in brackets are percentages

**Table 4.60**

**Preference of different public intervention based on quick accessibility**

Public intervention	Alappuzha		Palakkad		Thrissur		Total	
	No (%)	Rank	No (%)	Rank	No (%)	Rank	No (%)	Rank
PDS/ Maveli stores/ Supplyco	70 (43.8)	1	60 (35.7)	1	213 (117.7)	1	343 (67.4)	1
ICDS/ Angnawadi	5 (3.1)	5	2 (1.2)	2	20 (11)	2	27 (5.3)	2
Mid day meal scheme	6 (3.8)	2	1 (0.6)	3	19 (10.5)	4	26 (5.1)	4
MGNREA	6 (3.8)	2	0 (0)	5	19 (10.5)	4	25 (4.9)	5
NFSM	4 (2.5)	7	0 (0)	5	6 (3.3)	6	10 (2)	6
Kudumbashree	6 (3.8)	2	1 (0.6)	3	20 (11)	2	27 (5.3)	2
Others	5 (3.1)	5	0 (0)	5	5 (2.8)	7	10 (2)	6

Source: Primary Survey, Note: Values in brackets are percentages

**Table 4.61****Preference of different public intervention based on quality of food items**

Public intervention	Alappuzha		Palakkad		Thrissur		Total	
	No (%)	Rank	No (%)	Rank	No (%)	Rank	No (%)	Rank
PDS/ Maveli stores/ Supplyco	8 (5)	1	12 (7.1)	1	43 (23.8)	1	63 (12.4)	1
ICDS/ Angnawadi	3 (1.9)	4	3 (1.8)	2	11 (6.1)	3	17 (3.3)	3
Mid day meal scheme	2 (1.3)	5	2 (1.2)	3	9 (5)	4	13 (2.6)	4
MGNREA	2 (1.3)	5	1 (0.6)	4	6 (3.3)	5	9 (1.8)	6
NFSM	0 (0)	7	0 (0)	5	1 (0.6)	7	1 (0.2)	7
Kudumbashree	7 (4.4)	2	0 (0)	5	14 (7.7)	2	21 (4.1)	2
Others	6 (3.8)	3	0 (0)	5	6 (3.3)	5	12 (2.4)	5

Source: Primary Survey, Note: Values in brackets are percentages

Table 4.62 explains the suggestions in household food security among the sample households across the districts. Among the suggestions, most of the people opine that more emphasis on organic farming by minimizing use of chemicals and the effort for increasing farm production.

**Table 4.62****Suggestions in household food security**

Category	Alappuzha (n=160)	Palakkad (n=168)	Thrissur (n=181)	Grand Total (n=509)
Emphasis on organic farming by minimizing use of chemicals	150 (93.8)	147(87.5)	17 (94.5)	468 (91.9)
Effort for increasing farm production	54 (33.8)	43 (25.6)	46 (25.4)	143 (28.1)
Ensuring proper food storage facilities	20 (12.5)	31 (18.5)	30 (16.6)	81 (15.9)
Provision of adequate marketing facilities	12 (7.5)	18 (10.7)	16 (8.8)	46 (9)
Ensuring quality food supply at reasonable prices	28 (17.5)	20 (11.9)	15 (8.3)	63 (12.4)
Awareness and training regarding food security management practices	15 (9.4)	13 (7.7)	3 (1.7)	31 (6.1)
Others	0 (0)	2 (1.2)	0 (0)	2 (0.4)

Source: Primary Survey, Note: Values in brackets are percentages

**Table 4.63**  
**Results of ANOVA of purchased items**

Items	Source	df	Sum of Squares	Mean Square	F
Rice and rice products	Between Groups	2	1214.132	607.066	3.619*
	Within Groups	506	84872.607	167.732	
	Total	508	86086.739		
Wheat and wheat products	Between Groups	2	17.475	8.737	1.077 <sup>ns</sup>
	Within Groups	506	4105.224	8.113	
	Total	508	4122.699		
Pulse and pulse products	Between Groups	2	52.55	26.275	5.485* *
	Within Groups	506	2424.098	4.791	
	Total	508	2476.648		
Salt and spices	Between Groups	2	0.688	0.344	0.038 <sup>ns</sup>
	Within Groups	506	4576.371	9.044	
	Total	508	4577.06		
Sugar	Between Groups	2	68.491	34.246	3.486*
	Within Groups	506	4970.655	9.823	
	Total	508	5039.146		
Cereals	Between groups	2	30.269	15.135	5.365* *
	Within groups	506	1427.377	2.821	
	Total	508	1457.646		
Milk and Milk products	Between groups	2	4778.404	2389.2	4.291*
	Within groups	506	281729.35	556.777	
	Total	508	286507.75		
Edible oil	Between groups	2	12.051	6.026	1.479 <sup>ns</sup>
	Within groups	506	2061.811	4.075	
	Total	508	2073.862		
Tapioca	Between groups	2	699.04	349.52	44.286 **
	Within groups	506	3993.506	7.892	
	Total	508	4692.546		
Fruits nuts	Between groups	2	30.4	15.2	3.743*
	Within groups	506	2055.026	4.061	
	Total	508	2085.426		
Meat,egg,fish	Between groups	2	206.161	103.081	2.586 <sup>ns</sup>
	Within groups	506	20169.081	39.86	
	Total	508	20375.242		

Vegetables	Between groups	2	38.965	44.483	1.202 <sup>ns</sup>
	Within groups	506	18729.243	37.014	
	Total	508	18818.208		
Root tubers	Between groups	2	75.765	37.883	15.799 **
	Within groups	506	1213.28	2.398	
	Total	508	1289.045		
Beverages	Between groups	2	0.192	0.096	2.610 <sup>ns</sup>
	Within groups	506	18.571	0.037	
	Total	508	18.762		
Miscellaneous	Between groups	2	0.055	0.027	0.627 <sup>ns</sup>
	Within groups	506	22.053	0.044	
	Total	508	22.108		
Other foods	Between groups	2	0.393	0.197	0.991 <sup>ns</sup>
	Within groups	506	100.369	0.198	
	Total	508	100.762		

Source: Primary Survey

\*\* Significant at 1 % level,\* significant at 5% level, ns Non significant

Analysis of variance was done for comparing the purchase of each item in the three districts. Significant difference was found only in the case of rice and rice products, pulse and pulse products, sugar, cereals, milk products, tapioca, fruits-nuts, root tubers. In the case of all other items, F values were found to be in significant indicating that there is no significant difference in the purchase of that item among the three districts.

**Table 4.64**  
**Results of scaling**

Sl.No	Statement	Alappuzha	Palakkad	Thrissur	Grand Total
1	Farming is essential for household food security	63.75	48.51	50.83	54.13
2	Maintains the Stocks of rice or other staple foods	51.56	15.48	9.67	24.75
3	Transport Facility Available for Sale and Purchase of Food Items	60.63	52.08	52.49	54.91
4	There is Market for Sale and Purchase	60.94	52.38	50.83	54.52
5	Family is Able to afford all three meals a day	71.56	53.87	64.36	63.16
6	Rise in price of food items affected families' intake of food grain	60.63	44.94	52.76	52.65
7	Family gets 100 days employment under MGNREG Act 2005	48.13	34.52	39.23	40.86
8	Feel that scarcity is a chronic problem	2.19	5.65	3.87	2.55

Source: Primary Survey, calculated from the primary data

Note: Grand total refers to the scaling of the corresponding summation of tables

Tables 4.33, 4.36, 4.42, 4.43, 4.44, 4.46, 4.48, 4.49 are summed up into the scaling analysis. Table 4.64 analyses the results of scaling based on the statements and they categorized into eight heads under three districts. The scaling are strongly agree, agree, disagree and strongly disagree. The codes are given as 2 for strongly agree, 1 for agree, -1 for disagree and -2 for strongly disagree. If the scaling is in between the range of 0 to 33.33, it is low rating, in between 33.33 to 66.66 it is medium rating and above 66.66 shows the high rating in the statement. As per the ratings among the statements, most of the statements belong to the medium rating. In the case of farming, the people in Alappuzha district are more favour in the view and it is considered as essential for household food security. In almost all the statements, the population in the sample households in Alappuzha district is more favour and response as compared to other districts.

On the appraisal of rural food basket in Kerala and their determinants, the majority of the population is follow the food culture of Kerala and still rice is considered as the main staple food in Kerala. Due to the changes in the cropping pattern, the production of staple food is reduced as compared to the present to the previous situation. But the needs and requirements are increasing with a raise in the population and we need to depend on other states for our daily requirements.

The major food items in the rural food basket include rice, wheat, pulses, cereals, vegetables etc. and there are mainly three determinant factors depends on the accessibility of the food items. Income, taste and preferences and price are considered as the three factors for choosing the food articles and the food items can be accessible through the fair prices shops and various public distribution channels especially PDS. Majority of the people in the sample households are daily wage earners and they depend their needs of the food through the PDS and nearby shops. The food items are available in the market but still some of the people in the sample households face the problem of scarcity due to the lack of purchasing power or may be the poor performance of the distribution channels to the downtrodden sections of the society. This leads to the food insecurity in the state. So we need to strengthen the channels of food security and adopt the organic farming methods to increase the productivity and minimize the use of chemicals.

**CHAPTER-5**

**IMPACT OF PUBLIC  
INTERVENTION ON KERALA'S  
FOOD SECURITY**

## 5.1 Introduction

Public intervention is a policy mechanism of the government to provide adequate food security to all its masses by collecting the essential goods from the place it is cultivated, storing it by providing adequate warehousing facilities and distributing it through fair price shops. This is the way by which government intervene in the market system to promote welfare of the people. Mainly the interventions by the government look into two ways, in the context of macro level and in the context of micro level. In overall levels mainly focus on the increase in the production and yield of food grains by providing various infrastructures like high value inputs, essential irrigation facilities and opportunities for good markets etc... and procured and distributed through proper channels. At the micro level it mainly looks into the mechanism of enhancing the accessibility of the people through providing public intervention programmes, social security programmes and anti-poverty programmes like Public Distribution System (PDS), Mid Day Meal Scheme (MDMS), Integrated Child Development Scheme (ICDS), Mahatma Gandhi National Rural Employment Programme (MGNREGA), National Food Security Act (NFSA) etc. These interventions by the government increase the physical and economic accessibility of the people for affording and availing the food.

The chapter is being made to study the impact of public intervention in the food security in Kerala. Here the study deals the main aspects of public intervention programmes by the government like PDS, MGNREGA, ICDS, MDMS, NFSA etc. and the focus is on the most dominant public intervention by the government; i.e PDS. From the eighth plan onwards, the PDS is considered as one of the poverty alleviation programmes (Geetha and Suryanarayana, 1993) which provides food to the vulnerable sections of the population in urban as well as rural areas.



## **5.2 Major Public Interventions by the Government**

In order to provide food security and to reduce the quantum of food security problems, the government intervened in the market by adopting crisis led policies. The major policies and programmes by the government led to increase the ability and capacity of the common people. The major public interventions by the government are classified as Public Distribution System (PDS), Mid-Day Meal Scheme (MDMS), Integrated Child Development Scheme (ICDS), Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGA), and National Food Security Act (NFSA).

### **5.2.1 Integrated Child Development Scheme (ICDS)**

Integrated child development scheme was initiated by the central government with the help of United Nations International Children Emergency Fund, Cooperative for Assistance and Relief Everywhere (CARE) and World Food Program (WFP). It was a social welfare scheme to remove the problem of malnutrition and other health problems faced by children below 6 years of age, pregnant women and lactating mothers. It started its function in the year 1975 with Anganwadi centers (AWC). The scheme is mainly focused on the most vulnerable groups in the poor families especially living in disadvantaged areas, rural backward areas, tribal areas and urban slums.

The scheme provides services as supplementary nutrition, immunization, health check-up, referral service, pre-school non formal education, nutrition, and health education. The services are provided with the help of the ICDS team comprised of the Anganwadi workers, Anganwadi helpers, supervisors, Child Development Project Officers (CDPO) and District Programme Officers (DPO), Medical officers, Auxiliary Nurse Midwife (ANM) and Accredited Social Health Activist (ASHA). In the year 2011, the scheme was under reforms. During the 12<sup>th</sup> plan the Government of India allocated Rs.1, 23,580 crores for launching reforms. The major

reforms are strengthening and improving the quality of supplementary Nutrition program (SNP).

As a centrally sponsored scheme, Government of Kerala started ICDS in the year 1975 with a cost sharing ratio of 10%. The first selected place for the scheme was Vengara. In 1995, there were 120 projects under this scheme. Now it extended its services to all the districts of the state. Now as a part of restructuring and universalization, the services are extended to 258 ICDS projects in the state. As on March 31, 2016, 258 ICDS projects and 33115 Anganwadi Centres (AWCs) are operational across the state, covering 10.20 lakh beneficiaries under supplementary nutrition programme and 4.42 lakh children in the age group of 3-6 years under preschool education. Of the beneficiaries of supplementary nutrition programme 1.67 lakh were pregnant and lactating women and that of pre-school education 2.20 lakh were girls in the age group of 3 to 6 years. There is no significant improvement in the coverage of ICDS beneficiaries during 2015-16. Inadequate infrastructure facilities are a major constraint of ICDS in ensuring quality of service delivery through AWCs (Economic Review, 2016).

**Table 5.1**  
**ICDS Beneficiaries in Kerala**

<b>Categories</b>	<b>2005-06</b>	<b>2010-11</b>	<b>2015-16</b>
No. of AWC's Operating	32237	32237	30611
No. of AWC's providing SNP for 21+ days in a month	32183	32183	33115
<b>Total Population with in project</b>			
0-6 years	-	2746471	2732131
Preg and Lact women	-	422028	418376
<b>No of SNP beneficiaries</b>			
0-3 years	377107	512996	410360
3-6 years	525848	415410	442379
Preg and Lact women	162478	188468	167415
Adolescent girls	182083		-
<b>No. of Pre School Beneficiaries</b>			
3-6 years Boys	-	-	222369
3-6 years Girls	-	-	220010

Source: Economic Review; Various Issues

In the year 1975, only one ICDS project in Kerala and it gradually increased as 10 in 1980, 86 in 1990, 163 in 2000, and 258 at present. In accordance with the report of the Planning Board, 2011, there is one Anganwadi Centre for every 1000 population in rural and urban projects and one for every 700 population in tribal area. Table 5.1 depicts the ICDS beneficiaries in Kerala, from 2005-06 to 2015-16. The number of anganwadis working in the state has almost touched three thousand and more in 2005-06 and is almost gradually decreased in 2015-16. The anganwadis providing Supplementary Nutrition Programme (SNP) has increased slightly in 2015-16. Number of beneficiaries in the age group of 3-6 years on the supplementary nutritional programme in 2005-06 was almost 5 lakhs and more and it decreased in the consecutive years and the number of pregnant and lactating women was 1.6 lakh in 2005-06 and it increased to 1.8 lakhs in 2010-11 and it decreased to 1.6 lakhs in 2015-16.

### **5.2.2 Mid-Day Meal Scheme (MDMS)**

Another intervention by the public authorities was the Mid Day Meal Scheme (MDMS). It started in India in 1995 covering 2400 blocks. It provides school meal to all the students on all school working days except holidays. The earlier form of MDMS has intended to provide meals to the students belonging to the poorest of the poor category and in 1995 it extended its services to both primary and secondary students of the schools. The major agenda of the scheme was to enhance school's enrolment and attendance rates and the protection of children from food insecurity.

The Mid Day Meal Scheme was first introduced in the state of Kerala in 1984 in the LP Schools functioning in 222 villages; and the fishermen category as the majority community. Central Government covers all the operational costs of the scheme. These include the cost of supply of free food grains (wheat\rice), cost of transportation of food grains, cost of management, monitoring and evaluation and cost of one time central assistance for the construction of kitchen sheds. From 1960 onwards, the programme provided free meals to the students of lower strata in a small scale. The

MDMS was started in Kerala with the help of CARE (cooperate American Relief Everywhere) under US assistance. The main aim is to reduce the “classroom hunger” in the beneficiary schools. During 1985 the scheme was extended to all LP schools, the scheme was extended to Upper Primary Schools during 1987-88. The scheme was further extended to the students of class eighth during 2007-08. The scheme consists of supplying cooked food to the children using rice, pulses, vegetables, egg, milk and coconut oil/palmolien. District administration will lift allocated food grains on monthly basis starting from the first day of the month proceeding the allocation quarter. The Kerala State Civil Supplies Corporation is the nodal agency for arranging food grains from FCI. This Corporation has an inspection wing, which ensures the quality of the food grains at the time of lifting food grains (Annual Work Plan & Budget 2015-16).

**Table 5.2**  
**Mid-Day Meal Programme- Supply of Food grains**

Year	No. of Schools	No. of students benefitted	Supply of Food grains (Qtls)		
			Rice	Special Rice	Pulses
2000-01	12198	2779118	486670.1	141675.31	119354.8
2005-06	12367	2502230	964583.1	123725.2	-
2010-11	12339	2654807	130057.1	-	-
2015-16	11135	2116012	344929.1	-	105826
2016-17*	11881	2335123	466047	-	93693

Source: Economic Review; Various Issues, Note: \* as on 31/10/2016

The supply of food grains in the Mid-Day Meal Programme depicted in table 5.2. It emphasizes the details of total number of schools, the number of beneficiaries and the supply of food grains from 2000-01 to 2016-17. From 2000-01, the participation of schools in the programme has shown an increasing trend and it declined in 2015-16 and it has increased in 2016-17, but not as much as increase in 2000-01. The number of students benefitted the programme was almost 27 lakhs in 2000-01 and it has reduced in the consecutive years, but as compared to the present year to the previous year, it shows an increasing trend. The supplies of food grains allocated through Mid Day Meal Programme are rice, special rice and pulses. In the supply of food grains rice occupies the major position and it was almost 9.6 lakh quintals in 2005-06 and 1.2 lakh

quintals in the case of special rice in the same year. In the case of pulses in 2000-01, the supply of food grains was 1.1 lakh quintals and it has reduced in 2015-16 as 1.0 lakhs. SUPPLYCO is entrusted with the responsibility of providing commodities to mid-day meal programme in the state. The required quantity of rice is taken from Food Corporation of India (FCI). During 2015-16, FCI supplied 9, 64,583.05 quintals of rice and 1, 23,725.2quintals of special rice benefiting 25.02 lakh children. The cost of food grains is met through Education Department. One of the main reasons for decline in the number of children benefitting from this programme in the previous years was due to the noncooperation of students in certain districts. However, this scenario has changed and the number of children benefitting from the programme has increased in 2016-17 (Economic Review, 2016).

### **5.2.3 Mahatma Gandhi National Rural Employment Programme(MGNREGA)**

Mahatma Gandhi National Rural Employment Programme has the major initiative by the government to eradicate the poverty and unemployment in India. It provides 100 days employment to mature members of the rural household at a minimum statutory wages rate. The Act came to be known as National Rural Employment Guarantee Act (NREGA) later renamed as Mahatma Gandhi National Rural Employment Guarantee Act. The programme was primarily focused on the rural agriculture workers because most of the time, in the off season time, the farmers remains unemployed. So in order to reduce the level of seasonal unemployment, the government made a provision of 100 days of employment with a minimum wage of Rs.60 per day. The rate varies from state to state. For this employment programme, the skilled manual work is not needed. Any adult person of unskilled may enjoy the benefit of the scheme. The procedure to get employment was to approach their respective grama Panchayath and demand the work. After verification grama Panchayath will issue a job card. The person who acquired job card has the right to do works provided within 15 days. The card holder may avail 100 days of employment during a financial year. He also avails payment within

15 days of work. If the grama Panchayath may not provide the work within 15 days, the job card holder has the right to approach the grama Panchayath for unemployment allowances. The wage will be transferred to the card holder's bank account or to their post office accounts. The program also ensures women participate by insisting on one-third participation by women.

The National Rural Employment Guarantee Scheme (NREGS) was initiated in Kerala in the year 2006 in Palakkad and Wayanad districts as phase I and in Phase II it was extended to Idukki and Kasargod districts. From 2008 onwards it covered all the districts. It is renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). The scheme provides 100 days of employment to the disadvantaged sections of the state. The major activities or work undertaken by the workers were rural connectivity, flood control and protection, water conservation and harvesting, drought Proofing, micro irrigation, provision of irrigation facility, renovation of traditional water bodies, land development etc.

**Table 5.3**

**Employment Scenario in Kerala under MGNREGA**

Items/ Year	2006-07	2008-09	2010-11	2012-13	2014-15	2016-17
No of HH registered	213831	2365600	2915695	2486694	2824773	3162851
Employment demanded by HH	104927	698680	1186356	1671701	1538756	1405810
Demand against registration	49.07	29.53	40.68	67.22	54.47	44.45
Employment provided to HH	99107	692015	1175816	1670070	1445417	1220763
Employment provided (%)	94.45	99.05	99.11	99.90	93.93	86.83

Source: Economic Review; Various Issues, Note: HH-Households

Table 5.3 explains the employment scenario in Kerala under the MGNREGS programme from 2006-07 to 2016-17. Number of households registered under the scheme has increased over the years. In 2006-07, it was only 2 lakh, while it has increased to 31 lakh in 2016-17, that means the demand against registration has

noticeably increased over the years. The demand of households for employment has increased from 1lakh in 2006-07 to 14 lakh in 2016-17 and the employment provided to households has dramatically increased over the years. The majority percent of employment provided in 2012-13 was almost 99.90 percent. MGNREGA has become powerful instrument for inclusive growth in rural India through its impact on social protection, livelihood security and democratic governance. In addition to provide employment to the rural poor, the scheme is intended to create productive assets, which contributes towards development. The works related to natural resource management are given prime priority. During the review period, wage rate under this programme was rupees 240 per day. The financial achievement under MGNREGA during 2015-16 was Rs.1483.50 crore which is 93 percent of the total release during the year. A total of 7.42 crore person days are generated of which 1.29 crore for scheduled castes and 0.29 crore for scheduled tribes (Economic Review, 2016).

#### **5.2.4 National Food Security Act (NFSA)**

The National Food Security Act (NFSA) has ensured food security as a legal right to a large segment of the Indian population. “It provides for food and nutritional security in human life cycle approach, by ensuring access to adequate quantity and quality food at affordable prices to people to live a life with dignity and for matters connected therewith or incidental thereto”. It covers two-thirds of the population (81.35 crore persons) in all the states and union territories and they will get food grains at highly subsidized rates. It will also confer legal rights on women and children and other special groups such as destitute, homeless, disaster and emergency affected persons and persons living in starvation, to receive meals free of charge or at an affordable price. It has undergone changes in the existing TPDS and it covers up to 75% of the rural population and up to 50% of the urban population at the all India level under TPDS. The priority households are entitled to receive food grains at 5 kg per person per month at the issue prices of Rs.3.00, Rs.2.00 and Rs.1.00 kg for rice, wheat and coarse grains

respectively. The AAY households will get 35 kg of food grains per household per month at the same subsidized price.

Table 5.4 explains the provisions in the National Food Security Act (NFSA). The APL and BPL categorization has been changed into priority and general households and their entitlements as 5 kg per person per month and 3 kg per person per month. The identification of households in the coverage of TPDS is determined by the state/union territories. The price differences among the priority and general category has led to more coverage in the total population. In case, any State's allocation under the Act is lower than their current allocation, it will be protected upto the level of average off take under normal TPDS during last three years, at prices to be determined by the Central Government. Existing prices for APL households i.e. Rs. 6.10 per kg for wheat and Rs 8.30 per kg for rice has been determined as issue prices for the additional allocation to protect the average off take during last three years.

**Table 5.4**  
**Provisions in the NFSA**

<b>Entitlements</b>	<b>Priority</b>	<b>General</b>
Food grains Entitlement	5 kg per person per month	3 kg per person per month
Price	Not exceeding Rs. 3 per kg for rice, Rs. 2 per kg for wheat and Rs. 1 per kg for coarse grains	Not exceeding 50% of the MSP for wheat & coarse grains; not exceeding 50% of derived MSP for rice
Coverage Rural population - Upto 75% Urban population -Upto 50%	At least 46% of rural population At least 28% of urban population	Up to 29% of rural population Up to 22% of urban population



<b>Target Group</b>	<b>Entitlement</b>
Pregnant woman/ Lactating Mother	Meal, free of charge, during pregnancy and six months after child birth  Maternity benefit of Rs 1000 per month for a period of six months
Children (6 months-6 yrs)	Age appropriate meal, free of charge, through the local angnawadi
Children (6 years-14 yrs)	One mid-day meal, free of charge, everyday, except on school holidays, in all schools run by local bodies, Government and Government aided schools, up to class VIII, so as to meet the nutritional standards
Children suffering from Malnutrition	Meals through the local anganwadi, free of charge
Destitute persons	At least one meal every day, free of charge
Homeless persons	Affordable meals at community kitchens
Emergency and disaster affected persons	Two meals, free of charge, for a period up to 3 months from date of disaster
Persons living in starvation	Free Meals, two times a day, for 6 months from date of identification
Women Empowerment	Eldest woman of the household of age 18 years or above to be the head of the household for the purpose of issuing of ration cards

Source: NFSA, 2013

The National Food Security Act, 2013 is a legislation enacted by the central government which aims to provide subsidized food grains to approximately two thirds of India's 1.2 billion people. Government of Kerala decided to implement NFSA in the state with effect from November 1, 2016. Under the NFSA end to end computerization of the entire chain of the public distribution system has been planned with the objective of reducing leakages, better targeting and reducing the economic cost of distribution. Many states have already completed the implementation of various computerization components such as online allocation, supply chain management and Fair Price Shops (FPS) automation. The civil supplies department in collaboration with NIC, SUPPLYCO and other partner's plan to complete the implementation of computerization of PDS by 2017-18 (Economic Review, 2016).

In pursuance of the National Food Security Act 2013, Government of Kerala has decided to implement NFSA in the state with effect from 01.11.2013 and Kerala Civil Supplies Corporation (SUPPLYCO) is entrusted to implement door step delivery of PDS articles. To implement the NFSA, Government of Kerala published the draft priority list of 1.54 crore members from 33.34 lakh households in the state, who will be covered under NFSA subsidies. The remaining 2.09 crore members from 50.05 lakh households are covered under non priority list which includes 1.21 crore under APL-SS (State Subsidy). Kerala has a universal public distribution coverage which has been instrumental in providing food security to most of its population. In addition, state run SUPPLYCO is mandated to control the prices of 13 essential commodities by distributing it at subsidized prices through its 1406 stores spread across the state (Economic Review, 2016).

The state government has launched a new project intended to provide one time free meal a day for the needy. The scheme will be implemented with the help of Kudumbashree units and other voluntary organizations/non-government organizations in two selected districts as a pilot project from 2017-18 onwards. Price support of Rs.10 per meal will be given for 1000 people per day in each district. This project will be extended to the whole of Kerala in ensuing years (Economic Review, 2016).

### **5.2.5 Public Distribution System (PDS) in Kerala**

Public Distribution System (PDS) is one of the major public interventions structure by the Government of India. The roots of the present form of PDS started from the British period in India. At the time of colonial period, there was no system for rationing and control the food items, so the British government introduced the rationing system in 1939 (at the time of world war II).The system has to make function in the form of purchase food items from surplus areas and it allocates and distributes to

deficit areas through fair price shops and cooperative societies in urban areas in the beginning. On the basis of this system the separate Food Department was set up in 1943 and gradually this system has widened into rural areas also. The first rural rationing was introduced in Kerala (Malabar). Later rationing was abolished in 1947 and it reintroduced in 1950. The extension of PDS from this period and the distribution of food items mainly depend on the imports from other countries, rather than domestic production because of the food shortage at that time. To protect the poor and vulnerable people in the country from the fluctuations in prices of food grains, the Food Grains Price Committee was set up in 1964 and on the recommendation of this committee set up the Food Corporation of India (FCI) for trading operations and improved provision of food grains and to handle shortage of food grains in 1965. To protect the interest of the farmers through reasonable remuneration and an incentive to domestic production for promoting it, apart from imports from other countries, the Government introduced the Agricultural Price Commission in 1965 and it later known as Commission on Agricultural Costs and Prices (CACP). By the 1970s PDS had develop into a universal scheme for the distribution of subsidized food. From the periods 1970s and 1980s, the PDS coverage was extended to the rural areas and even after 1985 it also extended to tribal areas. In 1992, the scheme was revamped as to progress access of food grains to people as Revamped Public Distribution System (RPDS) in hilly areas, drought prone areas, tribal areas, inaccessible areas and to target the poor. The weakness of the PDS has been improved by the introduction of Targeted Public Distribution System (TPDS) in 1997 and it mainly emphasized the poor sections of the population. On the basis of income the people are classified into Below Poverty Line (BPL) and Above Poverty Line (APL) in TPDS. For reaching the benefits of food security among the poorest of poor households, government introduced Anthyodaya Anna Yojana (AAY) in 2000 and the Annapurna scheme (ANP) also launched in 2000 for providing food security to meet the requirement of senior citizens who have no regular means of substance from source of income and remain uncovered under the national old age pension. Recently, in September 2013, government enacted the National Food Security Act (NFSA). The act ensures food security as a legal

right to large sections of the population and it mainly relies on the existing TPDS to distribute food grains as a legal entitlement to poor households.

While taking the history of PDS in Kerala, we have seen many struggles of the working and common people. Today's shape of PDS has come from the struggles made by the peasants in the Malabar and Travancore areas. In 1940s, almost 50 percent of the food requirement comes from the domestic production and the rest we had depended Burma. In the time of Second World War, it has stopped and the high hoarding leads to spectacular increase in the price of rice. The struggles and movements of the people in Malabar, they established Food Committees and Producers and Consumers Co-operatives (PCCs) in 1942. The movement distributed rice to the poor people from forcibly confiscate from the godown of landlords and all these struggles lead to the official introduction of rationing in Malabar in 1944. On the same time, there was food shortage take place in Travancore and Cochin areas also and the Travancore Government forced to respond by issuing subsidized rice to 14 hotels in Alleppey and Sherthallai to provide subsidized meals to workers (Thomas Isaac and Ramakumar). After the formation of Kerala state, the first ministry was more concentrated on the issue of supply of food grains to Kerala. The Central Government in 1950s established a southern food zone consists of Kerala, Andhra Pradesh, Madras and Mysore. The aim of the effort was to direct the surplus production in Andhra Pradesh to deficit regions in the same zone and also the selling of rice to outside the region was considered as illegal. The system faced serious crisis in the zone and the interrupted supply of adequate quantity of rice from Andhra Pradesh and also the cutting of supply from the Central Government following the formation of southern food zone have led to the acute food shortage and high rise in food prices in Kerala. The strong protests across in Kerala lead to the abolishment of southern food zone in 1964 and the born of modern PDS in Kerala as a minimum statutory ration in 1965. After the introduction of PDS the Central Government met all the requirements of Kerala from the central quota and the food policy continued till 1990s, when the centre abolished the universal PDS. The introduction of TPDS after

the economic reforms, the population was classified into APL and BPL households on the basis of certain income-poor conditions and the allocation of food grains are based on this. At present, the APL cardholders get rice at Rs. 8.90 and BPL cardholders get at Rs. 1. Through the AAY scheme, BPL cardholders get rice at Rs. 1 and the Annapurna scheme provides rice at free of cost. The distribution of wheat provides at Rs. 6.70 for APL cardholders and at Rs. 2 for BPL cardholders. Sugar provides to only BPL at Rs.13.50 and Kerosene at Rs. 9.30. During April 2009 State government has launched a new scheme for issue of food grains Rs. 2/Kg subject to certain conditions. The scheme of issuing rice Rs.1/-per Kg has been implemented in the State from September 2011 onwards. As per this scheme all AAY cardholders will get 35 Kg of rice per month Rs.1/- per Kg and all BPL card holders other than AAY beneficiaries will get 25 Kg of rice per month Rs.1/- per Kg. The inmates of government approved orphanages will also get Rice Rs.1/- per Kg.

After the implementation of TPDS, the APL issue price was regularly lifted, and the gap between the market price and APL issue price narrowed and the poor quality of rice lead to the large number of APL households are shifted to open market for the purchase of food grains. It results the off take of APL households declined sharply and the central government reduced the quota of APL food grains. Due to the higher issue price, the APL households are expelled from the ration shops and it leads to worsen the financial viability of the network of ration shops in the state through the less purchase of food grains from the ration shops. Thus, it leads to the threatening of the system to an end itself. After the introduction of food security bill, food as a legal entitlement and it emphasized the role of TPDS effectively to the priority category and non priority category (earlier it was known as BPL and APL category) and it maintained the allocation under TPDS. National Food Security Bill (NFSA) has to reform the TPDS and it introduces the food coupons and cash transfers to the targeted beneficiaries in the place of their food grain entitlement” (Sanoop M S &. K P Mani).

**Table 5.5**  
**Public Distribution System in Kerala- A Profile**

Item	Unit	1990-91	1995-96	2000-01	2005-06	2010-11	2015-16	2016-17
No. of Ration Cards and Permits								
a) Ration Cards for families as on Ist April	No. (in 00,000)	50.5	55.7	61.11	63.83	73.40	83.14	83.19
b) Ration Permits for institution as on Ist April	No.	9016	11950	17448	16769	7603	2077	2068
No. of FCI Sub Depots as on Ist April	No.	39	39	-	23	22	25	25
No. of Wholesale Shops as on Ist April								
a) Co-operatives	No.	50	49	-	35	36	30	30
b) Supply co	No.			-		10	299	299
c) Others	No.	246	259	-	286	288	329	239
d) Total Wholesale Shops	No.	296	308	305	321	334	392	396
No. of Retail Shops as on Ist April								
a) Co-operatives	No.	1193	1095	1051	953	419	-	-
b) Others	No.	11814	12780	13212	13217	13833	13943	13940
c) Total Retail Shops	No.	13007	13875	14263	14170	14252	14335	14336
Sugar (allotted)	MT	150853	143423	-	45465	49362	49236	28721
Bale oil (allotted)	MT	40500	-	-	-	-	-	-
Kerosene(allotted)	KL	338462	350946	-	314663	225096	111024	58764

Source: Economic Review; Various Issues

Table 5.5 depicts the status of Public distribution system in Kerala. “The ration cards in 1990-91 were 51 lakhs, and at present, it has increased to additional 32 lakhs over a period of 25 years. Ration card permits to institutions in 1990-91 was 9016 and it increased to 131713 in 1995-96 and only 2077 in 2015-16. The number of APL card holders increased slightly to 62.64 lakh in 2015-16, from 62.52 lakh in 2014-15. There are 5.82 lakh AAY card holders in 2015-16 which was 5.83 lakh in 2014-15. As on October 31, 2016, there were 83.19 lakh ration cardholders in the state. Of the total, 62.54 lakh cardholders are under APL, 14.80 lakh under BPL and 5.85 lakh card holders are under AAY (Economic Review, 2016). The number of retail shops reached almost 14000 and more all over the years except in 1990-91 and most of them are in rural areas. Each retail outlet served about 400 households and it is accessible within the distance of 2 km to fetch his ration. The system required a certain minimum off take in all these shops if they are to be viable. The number of retail shops and FCI depots has also more or less constant throughout the years” (Sanoop M S & Mani K P).

Table 5.6 clearly tells us the category wise ration cards in Kerala in different years. Out of the total ration card holders of 78.36 lakhs in 2014-15, the APL card holders are 49.85 lakhs and 24.94 lakh in the category of BPL and AAY categories. The total number of ration card holders increased throughout the years and very high level increase in the case of AAY categories. AAY in 2002-03 was only 2.74 lakh households and it increased to 9.98 lakh households in 2014-15. The category of BPL and AAY is also increasing in all over the years.

**Table 5.6**  
**Category wise ration cards in Kerala**

<b>Year</b>	<b>Total number of ration cards (lakh)</b>	<b>APL (lakh)</b>	<b>BPL (lakh)</b>	<b>AAY (lakh)</b>	<b>BPL+AAY</b>
2000-2001	63.44	49.49	13.95	-	13.95
2002-2003	64.18	43.53	17.91	2.74	20.65
2004-2005	66.24	45.81	15.71	4.72	20.43
2006-2007	69.1	48.22	14.92	5.96	20.88

2008-2009	70.34	49.53	14.85	5.96	20.81
2010-2011	74.56	54.01	14.59	5.96	20.55
2012-2013	78.63	58.24	14.43	5.96	20.39
2014-2015	78.36	49.85	14.96	9.98	24.94
2016-2017	78.49	54.04	14.69	7.97	22.66

Source: Economic Review (various issues), Department of civil supplies,  
Government of Kerala

The allotment and off take of rice and wheat in different years is shown in table 5.7. The trend emphasized that the allotment and off take of rice increased throughout the years till 2006 and very high increase in 2002, 2004 and 2006. The allotment and off take has increased in all the years in the case of wheat and it has declined in 2004 and again it has slightly improved in the later years. During 2015-16 rice allotment to APL card holders was 4.64 lakh MT and BPL card holders 3.78 lakh MT. At the same period rice allotment to AAY card holders was 2.71 lakh MT (Economic Review 2016).

**Table 5.7**  
**Allotment and off take of rice and wheat in Kerala**

Year	Allotment of Rice	Off take of Rice	Allotment of Wheat	Off take of Wheat
1998	17.84	13.37	4.73	4.75
2000	17.84	16.56	4.78	3.64
2002	23.64	20.23	4.47	3.24
2004	23.55	22.04	2.04	1.75
2006	22.87	20.18	3.79	3.21
2008	11.06	8.54	2.89	2.59
2010	12.45	10.13	1.98	1.72
2012	13.98	12.76	2.06	1.85
2014	14.89	13.03	2.49	2.01
2016	14.43	12.89	2.27	1.93

Source: Economic Review (various Issues), Department of civil supplies, Government of Kerala

It is directed to permit 9 kg of rice and 2 kg of wheat to APL subsidy cardholders and 10 kg of rice and 3 kg of wheat to non-subsidy cardholders. The availability of rice as per Government of India allotment is only 8.7 kg per card per month and that of wheat is only 2.8 kg. The State Government has declared that every



BPL card holder should get 25 kg of rice @ Rs 1/- per kg. They are also eligible to get 8 kg of wheat @ Rs 2/- per kg. The allotment under AAY is sufficient to issue 35 kg per month and the allotment of rice under Annapurna scheme is 450 MT and the rate of issue is 10 kg per month at free of cost. There is huge stock of rice under Annapurna in all taluks due to shortfall in number of beneficiaries. The allotted number of Annapurna beneficiaries is 44980, whereas there are only 32152 beneficiaries under the scheme at present. The main problem for implementing the scheme is finding deserving beneficiaries. In the state of Kerala, almost all people are covered under any one of the pension schemes. As per the direction of Government of India, no person receiving any kind of pension is eligible to receive rice under this scheme. But no one is willing to forego pension for 10 kg of rice per month. Eligibility criteria for identifying Annapurna beneficiaries may be relaxed so as to include more deserving persons in the scheme (Government of Kerala, Civil Supplies Department).

**Table 5.8**  
**Distribution of rice and wheat through PDS in Kerala**

<b>Year</b>	<b>Rice (MT)</b>	<b>Wheat (MT)</b>
1990-91	1460124	201456
1995-96	1130432	423061
2000-01	656619	64277
2005-06	438048	175168
2010-11	1159597	186545
2015-16	1322896	252746
2016-17*	651959	154874

Source: Economic Review; Various Issues; Note: \* as on 31/10/2016, MT- Million Tonnes

“The main food items distributed through PDS are rice and wheat. Table 5.8 clearly depicts the picture of the distributional channel from 1990-91 to at present. The distribution of rice has increased dramatically over the years except in 2000-01 and 2005-06. The distribution of rice was 14 lakh MT in 1990-91 and as on 31<sup>st</sup> October 2016, it is 6 lakh MT. The distribution of wheat also shows an increasing

trend except in 2000-01. The distribution of wheat was 2 lakh MT in 1990-91 and as on October 2016, it is 1.5 lakh MT” (Sanoop M S & Mani K P).

**Table 5.9**  
**District wise Food Grain (Wheat) Distribution under PDS in BPL households**  
**(In Million Tonnes)**

Year/District	2005-06		2010-11		2015-16	
	Allotment	Off take	Allotment	Off take	Allotment	Off take
TVM	12610	12796	5220	6333	13349	12775
KLM	12388	12193	5920	5843	10930	10930
PTA	4795	5282	2240	2255	4638	4386.3
ALP	10610	10767	5080	5131	10995	9916.5
KTY	7800	7706	3732	3769	7475	7041.3
IDK	4930	4934	2345	2369	5164	4573.4
EKM	7910	7982	3920	3991	8503	7483
TCR	12430	12396	6030	6023	12432	11147
PKD	7320	7458	3609	3618	8193	7630.5
MLP	11370	11357	5490	5512	11379	10799
CLT	9730	10009	4850	4753	10014	9733.7
WYN	1896	2014	900	920	2594	2516
KNR	7155	7161	3520	3375	7185	7136
KSD	3795	3907	1848	1889	3870	100
TOTAL	114739	115962	55704	55433	116721	173558

Source: Economic Review; Various Issues, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP-Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

Table 5.9 illustrates the district wise wheat distribution under PDS in BPL households. It clearly tells us the allotment and off take of wheat in different years (2005-06, 2010-11 and 2015-16) across the districts. The allotment and off take was almost same in various years and very low allotment and off take has occurred in the year 2010-11. In 2010-11, the allotment of wheat was highest in Thrissur district and the off take was highest in Trivandrum district and very low in Wayanad district. In 2015-16, the allotment and off take was highest in Trivandrum district and there has been a large mismatch between the allotment and off take in Kasargod district in 2015-16. In 2015-16, the allotment was only 1.16 lakhs MT and the off take was 1.73 lakhs MT. The

percentage of off take against allotment in 2015-16 in Kerala was 148.6 percent and among the districts it was highest in Kollam district (100 percentages) and it was low in Ernakulam district (88.01 percent). In 2010-11, the percentage of off take against allotment in the state was 100.14 percent and among the districts it was highest in Kasargod (102 percent) and Wayanad districts (102 percent) and it was low in Kannur district (95.89 percent). In 2005-06, the percentage of off take against allotment in the state was 101.6 percent and among the districts it was highest in Pathanamthitta district (110.16 percent) and low in Kollam district (98.43 percent).

**Table 5.10**  
**District wise Food Grain (Rice) Distribution under PDS in BPL households**  
**(In Million Tonnes)**

Year/District	2005-06		2010-11		2015-16	
	Allotment	Off take	Allotment	Off take	Allotment	Off take
TVM	38240	37621	23585	23794	37440	37702
KLM	33370	33321	22124	22566	41756	41756
PTA	13826	13348	8680	8600	0	74.66
ALP	31680	31189	19310	19496	35401	3503.6
KTY	23321	23472	14230	14205	25449	26343
IDK	15069	16957	8935	8941	16257	16910
EKM	24368	23711	14840	15002	26794	28825
TCR	37794	36345	23128	23046	46745	46899
PKD	22025	22229	13870	13630	27140	27306
MLP	34875	34618	21280	21437	38615	38925
CLT	29605	29079	18550	18379	35017	36008
WYN	6124	6504	3420	3530	9078	8896
KNR	21770	21545	13540	13550	24427	26762
KSD	11505	11532	7036	7106	13422	100
TOTAL	343572	341471	212528	213280	377541	371541

Source: Economic Review; Various Issues, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP-Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

Table 5.10 elucidates the district wise rice distribution under PDS in BPL households. It expresses the allotment and off take of rice in 2005-06, 2010-11 and 2015-16 across the districts. The highest allotment and off take was taken by the

Trivandrum and Thrissur districts in 2005-06 and 2010-11 and in 2015-16, it was in Thrissur and Kollam districts. The lowest allotment and off take occurred in all the years in Wayanad district compared to other districts. In 2015-16, the allotment of rice under PDS in BPL households was 3.77 lakhs MT and the off take was 3.71 lakhs MT. In 2005-06, the percentage of off take against allotment in Kerala was 99.4 percent and among the districts it was highest in Idukki district (112.5 percent) and it was low in Thrissur district (96.02 percent). In 2010-11, the percentage of off take against allotment in Kerala was 100.4 percent and among the districts it was highest in Wayanad district (103.2 percent) and it was low in Palakkad district (98.03 percent). The percentage of off take against allotment in 2015-16 in Kerala was 98.4 percent and among the districts it was highest in Kannur district (109.6 percentage) and it was low in Wayanad district (98.0 percent).

**Table 5.11**

**District wise Food Grain (Wheat) Distribution under PDS in APL households  
(In Million Tonnes)**

Year/District	2005-06		2010-11		2015-16	
	Allotment	Off take	Allotment	Off take	Allotment	Off take
TVM	14350	13675	6900	5999	16046	15975
KLM	8687	8513	5010	4844	8935	8935
PTA	5307	5051	2530	2444	4638	4086
ALP	7509	7174	4101	4306	8516	9183.5
KTY	15957	14770	3740	3762	7940	8389.8
IDK	18380	17147	2040	1724	4186	4121.3
EKM	35633	33733	6738	6646	12837	14202
TCR	41410	40773	5807	5476	12416	11132
PKD	21767	20453	4940	4572	12315	12543
MLP	23690	23600	5410	5571	14337	14759
CLT	22040	21346	5200	4759	10203	9709.6
WYN	2650	2565	1430	1183	2782	2670
KNR	18833	18262	4180	3891	9904	9795
KSD	3135	3175	1860	1728	4127	100
TOTAL	243069	230237	94216	56903	129182	121603

Source: Economic Review; Various Issues, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP-Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

Table 5.11 illuminates the district wise wheat distribution under PDS in APL households. Comparing the allotment and off take of different years, the highest allotment and off take occurred in 2005-06. In 2005-06 and 2010-11, the distribution was high in Ernakulum district and in 2015-16; it goes to Trivandrum district and very low distribution in Wayanad district. In 2005-06, the percentage of off take against allotment in Kerala was 94.7 percent and among the districts it was highest in Kasargod district (101.3 percent) and it was low in Kottayam district (92.6 percent). In 2010-11, the percentage of off take against allotment in the state was 60.4 percent and among the districts it was highest in Alappuzha district (105.0 percent) and it was low in Wayanad district (82.7 percent). The percentage of off take against allotment in 2015-16 in Kerala was 94.1 percent and among the districts it was highest in Ernakulam district (110.6percentage) and it was low in Pathanamthitta district (88.1 percent).

**Table 5.12**  
**District wise Food Grain (Rice) Distribution under PDS in APL households**  
**(In Million Tonnes)**

Year/District	2005-06		2010-11		2015-16	
	Allotment	Off take	Allotment	Off take	Allotment	Off take
TVM	3739	2888	34375	33221	17256	17256
KLM	2916	1744	22765	22758	10411	10411
PTA	697	241	12705	12792	4638	3432
ALP	4495	4972	20136	19660	35401	35401
KTY	3682	3318	18582	18182	36386	37698
IDK	2154	1411	10558	9931	19665	19536
EKM	4451	4261	34204	33449	66979	67734
TCR	2838	1191	25088	28123	57143	56427
PKD	7269	4476	25370	24422	55716	55440
MLP	1302	1527	28442	28266	65196	43408
CLT	5929	4307	26233	25643	54694	54786
WYN	2432	1786	7572	7009	12972	12323
KNR	7028	6129	21006	21034	45898	45613
KSD	3220	3026	9913	9807	21310	100
TOTAL	56458	41277	296949	294296	463716	460771

Source: Economic Review; Various Issues, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP-Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

Table 5.12 explains the district wise rice distribution under PDS in APL households. It states the allotment and off take of rice in 2005-06, 2010-11 and 2015-16 across the districts. Rice distribution is very high in the latest years (2015-16), i.e. the allotment and off take has also crossed 4.6 lakh MT. In 2005-06, the allotment was highest (7269 MT) in Palakkad district, but the off take was only 4476 MT and the lowest allotment and off take was in Pathanamthitta district. In 2010-11, the allotment and off take was highest in Trivandrum district, and the lowest allotment and off take was in Wayanad district. In 2015-16, the highest distribution was in Ernakulam district and the lowest was Pathanamthitta district. In 2005-06, the percentage of off take against allotment in Kerala was 73.1 percent and among the districts it was highest in Malappuram district (117.3 percent) and low in Pathanamthitta district (34.6 percent). In 2010-11, the percentage of off take against allotment in the state was 99.1 percent and among the districts it was highest in pathanamthitta district (100.7 percent) and low in Wayanad district (92.6 percent). The percentage of off take against allotment in 2015-16 in Kerala was 99.4 percent and among the districts it was highest in Ernakulam district (101.1 percentage) and it was low in Malappuram district (66.6 percent).

**Table 5.13**

**District wise Food Grain (Rice) Distribution under PDS in AAY Scheme**

**(In Million Tonnes)**

Year/ District	2010-11				2015-16			
	Allotment	Lifting	Off take	Percentage	Allotment	Lifting	Off take	Percentage
TVM	27540	27540	28034	102	27080	27080	24075	88
KLM	21565	21565	22443	104	20485	20485	20485	100
PTA	10843	10843	11426	105	10778	10778	10599.46	98.3
ALP	19347	19347	18746	97	18645	18645	17081.68	91.6
KTY	14958	14958	15261	102	14582	14582	14000.87	96.0
IDK	13916	13916	13326	96	13616	13616	13499.98	99.1
EKM	16896	16896	17249	102	16652	16652	15790.01	94.8
TCR	24274	24274	24849	102	24077	24077	22229.96	92.3
PKD	20626	20626	20529	100	20933	20933	19580.7	93.5
MLP	23387	23387	23410	100	21719	21719	22273.13	102.5
CLT	17281	17281	18094	105	17408	17408	17130.23	98

WYN	15675	15675	16321	104	40776	40776	39960	98
KNR	15467	15467	15684	101	15026	15026	14575	97
KSD	8485	8485	8954	106	9241	9241	8594	92.8
TOTAL	250260	250260	254327	102	271018	271018	251282	92.7

Source: Economic Review; Various Issues, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP-Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

The AAY scheme is to provide 35 kg of food grains per month to the poorest of the poor families under BPL and is being implemented in the state since December 25, 2001. There were 5.82 lakhs AAY card holders in 2015-16 which was 5.83 lakh in 2014-15. In 2015-16, the allotment of rice under AAY continued at the level of 250260 MT. Government of India supplies food grains under AAY to the state at the rate of Rs. 3 per kg and the state government in turn provides it to the beneficiaries at the subsidized rate of Rs.1 per kg (Economic Review 2016).

Table 5.13 expounds the district wise rice distribution under PDS in AAY scheme households. In almost all the districts the distribution is 100 percentage and more except in Alappuzha and Idukki districts in 2010-11. This means that except these two districts, the off take is same or more than the allotment and lifting. In 2015-16, the distribution is almost below 100 percentage except in Kollam and Malappuram districts. This means that except these two districts, the off take is less than the allotment and lifting. In 2010-11, the percentage of off take against allotment in the state was 102 percent and among the districts it was highest in Kasargod district (106 percent) and it was low in Idukki district (96 percent). The percentage of off take against allotment in 2015-16 in Kerala was 92.71 percent and among the districts it was highest in Malappuram district (102.5 percentage) and it was low in Trivandrum district (88 percent).

**Table 5.14**  
**District wise Food Grain (Rice) Distribution under PDS in ANP Scheme**  
**(In Million Tonnes)**

Year/ District	2010-11				2015-16			
	Allotment	Lifting	Off take	Percentage	Allotment	Lifting	Off take	Percentage
TVM	380	380	404	106	354	354	301.542	85.18
KLM	236	236	202	85	-	-	-	-
PTA	259	259	297	115	180	180	220.75	122.64
ALP	126	126	140	111	72	72	114.78	159.42
KTY	207	207	218	106	84	84	97.94	116.5
IDK	125	125	136	109	84	84	84	100
EKM	338	338	317	94	156	156	183.1	117.3
TCR	156	156	150	96	78	78	80.53	103.24
PKD	270	270	308	114	108	108	88.79	82.21
MLP	390	390	307	79	252	252	284.53	112.9
CLT	289	289	251	87	-	-	136.23	-
WYN	279	279	286	102	355	355	352	99.1
KNR	254	254	276	109	198	198	237	119
KSD	291	291	290	100	148.24	148.24	100	67.45
TOTAL	3600	3600	3581	99	1878.08	1961.2	2281.19	121.46

Source: Economic Review; Various Issues, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP-Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

Annapoorna scheme provides 10 kg of rice free of cost per month to destitute of the age of 65 years and the above who are not in receipt of any of the pension schemes from the government. The targeted number of beneficiaries approved by the government of India is 44980. But the number of beneficiaries identified in the state as on March 31, 2016 is 23322 (Economic Review 2016).

Table 5.14 illustrates the district wise rice distribution under PDS in ANP scheme households. It clearly expresses the allotment, lifting and off take of rice in 2010-11 and 2015-16. In 2010-11, the total allotment was 3600 MT and the off take was only 3581 MT. i.e.; off take is less than the allotment and it seen in some districts like Kollam, Ernakulam, Thrissur, Malappuram and Calicut. In 2015-16, the allotment was only 1961 MT, but the off take was more than that and it shows more ration holders under the scheme of ANP in the latest years. The districts like,



Trivandrum, Palakkad, Wayanad and Kasargod have less off take than allotment. In 2010-11, the percentage of off take against allotment in the state was 99 percent and among the districts it is highest in Pathanamthitta district (115 percent) and it was low in Malappuram district (79 percent). The percentage of off take against allotment in 2015-16 in Kerala was 121.46 percent and among the districts it was highest in Alappuzha district (159.42 percentage) and it was low in Kasargod district (67.45 percent).

Table 5.15 explains the total number of cards and the breakup of priority, Non Priority, State Priority and AAY Cards in Kerala (District Wise) as on 09.03.2017 across the districts. The latest division of ration cards on the basis of the National Food Security Act and it divides the entire division in to two: priority and non priority. In the AAY scheme, the more scheme card holders are in Trivandrum district and less card holders in Pathanamthitta district. In Priority Household (PHH) category, the highest card holders are in Malappuram district and lowest in Wayanad district. Among the non-priority card holders, the highest occurred in Ernakulum district and lowest in Wayanad district. In the Annapoorna scheme, the highest ration card holders are in Malappuram district and lowest in Idukki district.

At present, after the introduction of NFSA, there will be some modifications in the public distribution system. In accordance with the NFSA, the classification of APL and BPL households has changed into priority and non priority households. Kerala will have ration cards in four colours and it will replace the above and below poverty line cards in use. The four colours are yellow, pink, blue and white and the each colour signifies and identifies the sections of the society. In yellow cards are the most economically backward sections of society, mostly AAY beneficiaries and they get 28 kg of rice and 7 kg of wheat completely free. The pink colour indicates the indigent sections of the society and in each member of family to get 5 kg of food grains completely free. The blue colour card holders get the state government subsidy and they get 2 kg of rice at Rs.2 per kg. The white colour category is the general category and they get rice at the rate of Rs. 8.90 per kg and wheat at Rs. 6.70 per kg.

**Table 5.15**  
**Total Number of Cards and the breakup of Priority, Non Priority, State Priority and AAY Cards on in Kerala**  
**(District Wise) on 09.03.2017**

District	NFSA			Non NFSA	Total (AAY+PHH+ Non Priority)		
	AAY	PHH	(AAY+PHH)	Non priority		NP(S)	Annapoorna
	Ration Cards	Ration Cards	Ration Cards	Ration Cards	Ration Cards	Ration Cards	Ration Cards
TVM	63898	351539	415437	464769	880206	272602	389
KLM	50108	264294	314402	374801	689203	246046	518
PTA	24804	99572	124376	195187	319563	112546	226
ALP	41282	201339	242621	309116	551737	195957	327
KTY	35369	156478	191847	292024	483871	158772	427
IDK	33913	119111	153024	122412	275436	79838	121
EKM	37668	243046	280714	511751	792465	311503	448
TCR	54640	273199	327839	448514	776353	299108	568
PKD	49261	288260	337521	340536	678057	234534	205
MLP	53319	338804	392123	439886	832009	335699	682
CLT	40851	264397	305248	394969	700217	265854	613
WYN	47068	53783	100851	95348	196199	64942	329
KNR	35245	158804	194049	371838	565887	245904	451
KSD	28374	94083	122457	154370	276827	112131	422
Total	595800	2906709	3502509	4515521	8018030	2935436	5726

Source: Civil Supplies Department, Kerala, Note: TVM- Trivandrum, KLM- Kollam, PTA-Pathanamthitta, ALP- Alappuzha, KTY-Kottayam, IDK- Idukki, EKM- Ernakulam, TCR- Thrissur, PKD- Palakkad, MLP- Malappuram, CLT- Calicut, WYN- Wayanad, KNR- Kannur, KSD- Kasargod

Table 5.16 explains the total number of ration cards and the beneficiaries, with breakup of priority, non priority, state priority and AAY Cards in Kerala (District Wise) as on 09.03.2017 across the districts. Under the National Food Security Act (NFSA), the total number of card holders are more than 35 lakhs and the beneficiaries almost crossed 1.5 crore people. In the non-priority groups, the ration card holders crossed 45 lakhs and the beneficiaries crossed 1.8 crore people. Out of these total ration cardholders of NFSA category crossed 80 lakhs and the beneficiaries crossed 3.4 crore people.

**Table 5.16**  
**Total Number of Cards and the breakup of Priority, Non Priority, State Priority and AAY Cards on in Kerala on 09.03.2017**

<b>Categories</b>	<b>Ration Cards</b>	<b>Beneficiaries</b>
<b>NFSA</b>		
AAY	595800	2557214
PHH	2906709	12922826
(AAY+PHH)	3502509	15480040
<b>Non NFSA</b>		
Non priority	4515521	18714522
Total (AAY+PHH+Non Priority)	8018030	34194562
NP(S)	2935436	12114128
NP(NS) (Non NFSA – NP(S))	1580085	6600394
Electrified	7740820	-
Non Electrified	277210	-
Annapoorna	5726	-

Source: Civil Supplies Department, Kerala

Table 5.17 shows the details of cardholders and their entitlements to food grains in 2016. Out of the total beneficiaries (1.2 crore people) of National Food Security Bill Priority Households (NFSA PHH), they get 5 kilogram of food grains per member per month. In the AAY scheme, the total beneficiaries are 25 lakhs and they get food grain entitlement of 35 kilogram per households. In the non

NFSA (non priority) category card holders will get 2 kilogram of food grains per member out of 1.8 crore beneficiaries.

**Table 5.17**  
**Details of Card Holders and Entitlements of Food grains (2016)**

<b>Category</b>	<b>Ration Cards</b>	<b>Beneficiaries</b>	<b>Entitlements (Per Month)</b>
NFSA PHH	2837236	12921411	5 kg Per Member
AAY	595800	2558632	35 kg Per Households
Non NFSA ( Non Priority)	4589324	18744057	2 kg Per Member
<b>Total</b>	<b>8022360</b>	<b>34224100</b>	-

Source: Economic Review; 2016

Table 5.18 explains the retail price of commodities issued through ration shops under different schemes in different years among rice and wheat. In the case of rice, APL households get their food entitlements of rupees almost 7.90-8.90 in different years and in the case of BPL and AAY households, they get their entitlement of rupees 2-3. The entitlement of rice is available at free of cost in ANP scheme households. In the case of wheat, APL households get at the rate of 6.70 rupees and it was 2-3 rupees in BPL households. Sugar is available only to BPL households.

**Table 5.18**  
**Retail Price of Commodities issued through Ration Shops**

<b>Category</b>	<b>Price/Kg</b>		
	<b>2000-01</b>	<b>2005-06</b>	<b>2010-11</b>
<b>Rice</b>			
APL	8.90	8.90	7.90
BPL	2.00	3.00	6.20
AAY	2.00	3.00	-
ANP	Free of Cost	Free of Cost	-
<b>Wheat</b>			
APL	6.70	6.70	5.70
BPL	2.00	3.00	
<b>Sugar-BPL</b>	13.50	13.50	13.50
<b>Kerosene/Liter</b>	9.30 to 9.70	9.30 to 9.70	9.50

Source: Economic Review; Various Issues

The discussion on public distribution system on food security in Kerala in the earlier part was purely based on the secondary data and now the discussion is further extended using the primary data collected from Alappuzha, Thrissur and Palakkad districts covering 509 households.

**Table 5.19**  
**Time of purchase of each food items from PDS**

Items	Time of purchase	Alappuzha (n=160)	Palakkad (n=168)	Thrissur (n=181)	Total (n=509)
Rice	Weekly	8 (5)	7 (4.17)	3 (1.66)	18 (3.54)
	Monthly	69 (43.13)	107 (63.69)	124 (68.51)	300 (58.94)
	Occasionally	24 (15)	10 (5.95)	27 (14.92)	61 (11.98)
	Never	59 (36.88)	44 (26.19)	27 (14.92)	130 (25.54)
Wheat/Atta	Weekly	2 (1.25)	3 (1.79)	1 (0.55)	6 (1.18)
	Monthly	68 (42.5)	65 (38.69)	117 (64.64)	250 (49.12)
	Occasionally	20 (12.5)	3 (1.79)	8 (4.42)	31 (6.09)
	Never	70 (43.75)	97 (57.74)	55 (30.39)	222 (43.61)
Sugar	Weekly	1 (0.63)	2 (1.19)	0 (0)	3 (0.59)
	Monthly	16 (10)	16 (9.52)	0 (0)	32 (6.29)
	Occasionally	16 (10)	20 (11.9)	21 (11.6)	57 (11.2)
	Never	127 (79.38)	130 (77.38)	160 (88.4)	417 (81.93)
Others	Weekly	1 (0.63)	0 (0)	0 (0)	1 (0.2)
	Monthly	7 (4.38)	16 (9.52)	13 (7.18)	36 (7.07)
	Occasionally	4 (2.5)	4 (2.38)	3 (1.66)	11 (2.16)
	Never	148 (92.5)	148 (88.1)	165 (91.16)	461 (90.57)

Source: Primary Survey, Note: Values in brackets are percentages

Table 5.19 illustrates the time of purchase of each food items from PDS. The time of purchases are weekly, monthly, occasionally and never. The food items are rice, wheat, sugar and others. In the case of rice and wheat, the households

purchase the food items from ration shops monthly and in the case of sugar and others, they do not purchase from ration shops. Compared to the districts Thrissur district dominates the purchase of rice on monthly basis and almost 59 percent of the households purchase their rice from PDS on monthly basis. In the case of wheat, almost 49 percent of the people purchase their food items from PDS on monthly basis and it was high in Palakkad district. Among the sample households, they are reluctant to purchase sugar and others from PDS across the districts.

The average quantity of each food item purchased from PDS is shown in table 5.20. It explains almost all the districts the quantity of rice and rice products, wheat and wheat products, sugar and others are more or less the same. Among the average quantity of food items purchased from PDS among the districts, Thrissur district dominates in the case of rice and wheat. In the case of sugar and others, Alappuzha district dominates the status.

**Table 5.20**

**Average quantity of each food items purchased from PDS**

Items	Alappuzha		Palakkad		Thrissur		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Rice & Rice Pdts	10.64	7.54	8.40	7.14	11.24	6.50	10.15	7.09
wheat /Atta	3.04	1.91	3.23	1.95	3.85	1.60	3.44	1.82
Sugar	2.31	3.27	1.72	1.32	2.07	2.28	2.01	2.38
Others	1.88	2.01	0.90	0.21	0.63	0.39	1.05	1.12

Source: Primary Survey

Most of the sample households opined that, in their areas they have fair price shops. 88 percent of the people enjoys the benefits of fair price shops in their areas and among these, the people in Thrissur and Alappuzha districts enjoys the benefits more as compared to other districts (table 5.21).

**Table 5.21****Have Fair Price Shops in the areas**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
No	14 (8.75)	34 (20.24)	13 (7.18)	61 (11.98)
Yes	146 (91.25)	134 (79.76)	168 (92.82)	448 (88.02)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 5.22 explains the accessibility aspect of the ration shops through the distance from home to ration shops. Almost 82 percent of the sample households are easily accessible to the ration shops from their home; all the ration shops are in the circle of below 2 kilometers. Among these, the people in Thrissur district are very comfort to access the ration shops within 2 kilometers. Among the sample households, only 18 percent of the people access their fair price shops for their food requirements in the above 2 kilometer.

**Table 5.22****Distance between Home and ration shop**

<b>Distance</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Above 2 km	38 (23.75)	33 (19.64)	22 (12.15)	93 (18.27)
Below 2 km	122 (76.25)	135 (80.36)	159 (87.85)	416 (81.73)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

**Table 5.23****Knowledge about the availability and supply of ration items in the fair price shop**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Notice Board	18 (11.25)	19 (11.31)	7 (3.87)	44 (8.64)
Friends & Relatives	141 (88.13)	149 (88.69)	170 (93.92)	460 (90.37)
Friends & Relatives or Notice Board	1 (0.63)	(0)	4 (2.21)	5 (0.99)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Table 5.23 exhibits the knowledge about the availability and supply of ration items in the fair price shops among the sample household across the districts. Major portion of the population gets the awareness about the availability and supply of ration items in the fair price shops from the oral communication between the people, mainly from friends, relatives and neighbors. Very small part of the population knows about the availability and supply of ration items in the fair price shops from notice boards and other alternative ways. Among these, Thrissur district was having more knowledge about the availability and supply of ration items in the fair price shops from friends and relatives.

**Table 5.24****Aware of Ration entitlement per month**

Category	Alappuzha	Palakkad	Thrissur	Grand Total
Always	85 (53.13)	74 (44.05)	153 (84.53)	312 (61.3)
Sometimes	40 (25)	57 (33.93)	9 (4.97)	106 (20.83)
Never	35 (21.88)	37 (22.02)	19 (10.5)	91 (17.88)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

Most of the sample households are conscious about their ration entitlements per month across the districts. More than half of the population is always aware of their entitlements from the ration shops, accordance with which category



they belong, whether APL, BPL, AAY etc. The highly rich people in the sample households do not bother about the entitlements, prices etc from ration shops and it was very small part of the population. Among the districts, peoples from Thrissur district always intensely observe the ration entitlements per month (85 percent) (table 5.24).

**Table 5.25**

**Received Monthly Ration items regularly from fair price shop**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Always	70 (43.75)	104 (61.9)	164 (90.61)	338 (66.4)
Sometimes	39 (24.38)	33 (19.64)	9 (4.97)	81 (15.91)
Never	51 (31.88)	31 (18.45)	8 (4.42)	90 (17.68)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Table 5.25 shows whether the households received monthly ration items regularly from fair price shops and the responses are categorized into three: always, sometimes, never. Almost 66 percent of the population always received monthly ration items regularly from fair price shops. That means, most of the people in the rural areas are ready to receive food items from fair price shops and only 17 percent of the people not depend on the fair price shops for their daily bread.

**Table 5.26**

**Get Quality Ration Items from the ration shop**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	32 (20)	31 (18.45)	52 (28.73)	115 (22.59)
Agree	47 (29.38)	74 (44.05)	81 (44.75)	202 (39.69)
Disagree	34 (21.25)	31 (18.45)	38 (20.99)	103 (20.24)
Strongly Disagree	47 (29.38)	32 (19.05)	10 (5.52)	89 (17.49)
<b>Grand Total</b>	<b>160 (100)</b>	<b>168 (100)</b>	<b>181 (100)</b>	<b>509 (100)</b>

Source: Primary Survey, Note: Values in brackets are percentages

Among the sample households, the major portion of the people enjoys the items they get from ration shops. 22 percent of the people strongly opine that they availed the quantity of ration items from the ration shops and at the same time 17 percent of the people strongly agree with that they do not avail the quantity of ration items from ration shops. So there is a mixture of both responses in the sample households among the districts (table 5.26).

**Table 5.27**

**Allotted Quota Ration Items is Adequate**

<b>Category</b>	<b>Alappuzha</b>	<b>Palakkad</b>	<b>Thrissur</b>	<b>Grand Total</b>
Strongly Agree	14 (8.75)	19 (11.31)	27 (14.92)	60 (11.79)
Agree	44 (27.5)	70 (41.67)	93 (51.38)	207 (40.67)
Disagree	39 (24.38)	38 (22.62)	31 (17.13)	108 (21.22)
Strongly Disagree	63 (39.38)	41 (24.4)	30 (16.57)	134 (26.33)
Grand Total	160 (100)	168 (100)	181 (100)	509 (100)

Source: Primary Survey, Note: Values in brackets are percentages

The allotted quota of ration items is enough for the households presented in table 5.27. It reveals that, majority of the sample households are avail adequate quantity of ration items in accordance with their needs. Almost 53 percent of the population opined that the allotted quota of ration items is adequate for their daily living. But 26 percent of the people strongly disagree that, they were not get enough quantity of ration items or allotted quota of ration items is not adequate. So there is a mixture of both responses in the sample households among the districts. In this chapter we have discussed the public interventions and is of the opinion that the public interventions in food supply definitely affect food security. There is more scope discussing critically the role of public interventions, but not attempted in this thesis.

**CHAPTER – 6**

**SUMMARY, CONCLUSION AND**

**POLICY IMPLICATIONS**

## 6.1 Introduction

Food meets the dietary needs and preferences for an active and healthy life in the rural households in Kerala. The prominent dimensions of food security are the availability, accessibility and affordability features of the food structure. The study explored the analysis of food security among rural households in Kerala. Due to the increase in population and decline in the area under food crops, Kerala is facing severe food insecurity problem. The trend in Kerala clearly postulates towards cash crops, rather than food crops, because of the more remunerative nature of the cash crops and less attention needed compared to food crops. Rice is the staple food of Kerala, and we produce only 15 percent of our requirement, so for the remaining portion, we depend on other states for our daily necessities. This will make a question of food insecurity and sustainability to the present generation and also the future generations. Thus, there is a shortage of supply of food items in respect the demand of the population. The demand side depends on the growth of population, age composition of households and the calorie intake in every day and in the case of food supply, the quantity of consumption. Most of the food grain requirements in the state depend on the feasibility of other neighboring states. The percentage of deficit of food grains is declining and the dependency ratio of other states is increasing. Moreover, there are many households in rural areas who mainly depend on the basic public intervention systems for their food requirements.

The major objectives of the study are to examine the demand side and supply side availability of food in Kerala, to assess the food basket of rural households in Kerala, to identify the determinants of rural food basket in Kerala and to assess the impact of public intervention on food security in rural Kerala. The internal production in the state could not persuade the need of the food requirements in the state and it depends on the well being of other states. Rice is the main staple food in the food basket of rural households in Kerala and the income, taste and preferences are the main determining factors of rural food basket. The contribution of Public Distribution System

(PDS) in addressing the food security concerns of the rural households had played a significant role in the health achievements of the state.

The study made use of both primary data and secondary data. Secondary data have been collected from various publications of government of India, State governments. Multi stage systematic random sampling technique was used to select the districts, blocks, Panchayaths and sample of rural households for the purpose of primary data collection. On the basis of the major food producing areas in Kerala, three districts were selected for the study, i.e; Alappuzha, Thrissur and Palakkad. From these districts, 3 blocks, Chengannur from Alappuzha district, Kodakara from Thrissur district and Mannarkad from Palakkad district were selected and the surveyed Panchayaths are Mulakuzha from Chengannur block, Mattathur from Kodakara block, Alanallur from Mannarkad block respectively taking into consideration the major food crops and the number of rural households so as to support the objectives of the study.

The first chapter deals with the introduction which covers the literature review, research gap, statement of the problem, objectives, hypotheses, methodology and scheme of the study. The second chapter deals with the food security situation in India which covered the entire food structure formation from the pre independent period to the present stage. Chapter three discussed the demand side and supply side availability of food crops in Kerala. It focused on the requirements and the dependence of other states for food in the state. Chapter four deals with the appraisal of food basket and identifies the determinants of rural food basket in Kerala. The scaling method was used to know the impact of different factors for determining the food structure in the rural households. Chapter five deals with the public intervention to food security in Kerala and mainly concentrated on the PDS in Kerala and the last chapter deals with the summary, conclusion and the policy implications.

## 6.2 Major Findings

### 6.2.1 Status of food security in India

- About 795 million people are undernourished globally, down 167 million over the last decade, and 216 million less than in 1990–91. The decline is more pronounced in developing regions, despite significant population growth.
- The use of land under the categories of total cropped area and area sown more than once are gradually increased after the period of economic reforms in India.
- The net availability of food grains mainly depends upon the production of major food grains in the country and the changes in population, climatic conditions etc. are some other factors on the net availability depends.
- The growth rate in yield of total food grains production in pre-reform period is 2.60 percent per annum, while in post reform period it has marginally increased to 2.65 per cent per annum.
- Area under cultivation exhibits the least increase with rice (0.23 %), wheat (22.46%), cereals (-1.85%) and pulses (3.09%). The percentage increase in yield of wheat was 70.95 in the pre reform period, which has gone down to 23.17 percent in the post reform period.
- The total production of rice in the country is estimated at 104.80 million tonnes which is lower by 1.85 million tonnes than the production of rice during 2013- 14. Production of wheat estimated at 88.94 million tonnes is also lower than its record production of 95.85 million tonnes during 2013-14.
- The production of Coarse Cereals is estimated at 41.75 million tonnes which is lower than the production of Coarse Cereals during 2013-14.

- Total food grains production during 2014-15 is estimated at 252.68 million tonnes is lower by 12.36 million tonnes than the record production of 265.04 million tonnes of food grains achieved during 2013-14.
- The top producing 10 states accordingly are West Bengal, Uttar Pradesh, Andhra Pradesh, Punjab, Tamil Nadu, Bihar, Chhattisgarh, Orissa, Assam, and Karnataka. Among these the top three positions are occupied by West Bengal, Uttar Pradesh and Andhra Pradesh in 2014-15.
- The very least wheat producing states are Andhra Pradesh, Arunachal Pradesh and Nagaland and they cultivate only very few of their area. The states like Kerala, Goa Manipur, Mizoram and Tamil Nadu have no production in wheat has takes place.
- The very least coarse cereals producing states are Goa, Kerala and Tripura and they cultivate only very few of their area. In the case of Kerala, it produces only very rare part. The states like Manipur, Meghalaya, Mizoram and Netherlands are produce coarse cereals states in the country mainly after 2010-11.
- The recent initiatives on food security introduced by the government after the economic reforms are mainly classified as Mid Day Meal Scheme (MDMS), Targeted Public Distribution System (TPDS), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), National Food Security Act (NFSA).
- India is home for 25 percent of the world's hungry population. An estimated 43 per cent of children under the age of five years are malnourished.

### 6.2.2 The supply and demand side of food grains in Kerala

- The share of agriculture and allied sectors in the total GSDP of Kerala has declined from 14.38 percent in 2011-12 to 11.48 percent in 2014-15 and to 10.38 percent in 2015-16.
- The seventies was a period of decelerated growth in agricultural output in Kerala mainly due to a sharp decline in area under crops, especially food crops.
- The state produces only 15 percent of its required quantity of food grains by itself, and the remaining we depend on other states. From the time of the formation of the state, the per capita cereal consumption levels in Kerala, as well as the per capita calorie consumption levels have been lower than in India.
- The state level estimates of gross cropped area, net cropped area and cropping intensity has shown an increasing trend all over the years since the formation of the state. The cropping intensity has increased only slightly all over the years.
- Due to mixed cropping pattern, availability of irrigation facilities and other measures of intensification in agriculture, there is considerable increase in the double or multiple cropped areas. In order to assess the trends in intensity that is the ratio of total cropped area to the net cropped area, the cropping intensity is calculated. On assessing the years from 1960-61, the cropping intensity was maximum in 2005-06.
- The area under food crops has declined from 1960-61 to 2015-16. In 1960-61, the area under food crop was 1565.2 thousand hectares in 1960-61, it declined to 982.3 thousand hectares in 2015-16.



- The production of food crops has increased dramatically from 1960-61 to 2015-16. In 1960-61, the production of food crop was 3036.5 thousand tonnes in 1960-61 and it increased to 4815.3 thousand tonnes in 2015-16.
- The yield of food crops has increased dramatically from 1960-61 to 2015-16. In 1960-61, the yield of food crop was 1940.01 kg/ha in 1960-61 and it increased to 4902.07 kg/ha in 2015-16.
- From 2004-05 to 2012-13, the trend shows that the area under food grains in Kerala has declined and a slight increase in the next year (2014-15), and again it shows the decreasing trend.
- In 2004-05, the production of the total food grains was 679 thousand tonnes and it gradually declined to 552 thousand tonnes in 2015-16.
- The yield of all the food grains except pulses has gradually increased all over the years. In 2004-05, the yield of the total food grains was 2238 kg/ha and it gradually increased to 2747 kg/ha in 2015-16.
- In 2015-16, the area under rice cultivation was more in the districts of Palakkad, Alappuzha and Thrissur districts respectively.
- The rice area and the percentage of rice area to gross cropped area are highest in three districts, namely Alappuzha, Palakkad and Thrissur.
- The internal production has drastically declined from 1070 thousand tonnes in 1960-61 to 552 thousand tonnes in 2015-16 and the percentage rate in 1960-61 was 52 percent of the internal production and it has reduced to 15 percent in 2015-16.

- In 1960-61, the requirement of rice was only 2058 thousand tonnes and it has increased to 3680 thousand tonnes in 2015-16, that means, all over the years the dependent ratio of the other states has increased severely. In 1960-61, our internal production of food grains was 52 percent and in 2015-16, it was reduced to 15 percent.
- The requirement of rice and the dependence on other states are increasing throughout the years from 1971 to 2015. Almost 3393 thousand tonnes of rice is required in the state in 2015-16 compared to 1991 thousand tonnes in 1980-81, which implies the dependence on other states for our daily rice requirements is increasing.

### **6.2.3 An appraisal of rural food basket in Kerala**

- The average number of family members belongs to nuclear family. On these, Thrissur (100 percent) occupies highest number in the case of nuclear family. Palakkad district (8.33 percent) occupies highest in the case of Joint Family.
- Most of the sample households in Thrissur district belong to Christian religion (65.2 percent). Hindu religion (51.3 percent) is highest percent in Alappuzha district. But almost 45.8 percent of the sample households in Palakkad district belong to Muslim religion. Hence there is a dominance of specific religion across the sample districts.
- Most of the sample households belong to Coolie workers (38.1 percent). Among these, highest in this employment goes to Thrissur district (51.4 percent). Across the districts, the professional employees have seen very negligible level. Only 9.6 percent of sample households are engaged as agricultural labours.

- Most of the sample households are included in salary/wage category (69.19 percent). The next is from other category (12.77 percent). A few is from a category of other than agricultural activity (91.18 percent).
- Majority of the sample household were having primary education across the districts (31.68 percent). Primary education is highest in Thrissur district (44.5 percent). Across the districts, numbers of illiterate is high in Palakkad district (2.54 percent). 24.97 percent of the sample households belong to the category of graduation and post graduation across the districts.
- The highest area of land is owned by the category of 6-20 cents (50.69 percent), and the least land owned by above 100 (0.2 percent). In this category, Thrissur has secured highest position in land owned classification.
- 17 percent of the households utilize their land for housing and cultivation purposes. Among the districts, the people in Alappuzha are using their land mostly for housing purposes (82 percent).
- The public interventions and other private outlets solve the problem of non availability of essential food items easily and only very negligible part of the population still face the problem of lack of availability of essential food items.
- Majority of the sample households purchased their requirements of food items from market using their own money and also the households mostly depend on Public Distribution system.
- The majority of the food grains are easily available in the market and the households satisfy their daily needs very efficiently and very negligible part of the people in the sample households are against this view.

- Regarding the different sources, the respondents have the opinion that, they purchased their needs from local dealers, nearby town, Maveli stores and others. Most of the households in the sample area have opined that the main source of purchase of food items is from local dealers.
- 77 percent of the population is of the opinion that they got enough food articles very easily from the markets.
- Thrissur district occupies highest priority in terms of transportation facility in the sample households across the districts and only very negligible part of population are disagreeing with the facilities of transportation.
- As compared to other districts; the financial status of the people in sample households across districts are very high; so they are able to afford all three meals a day.
- 26 percent of the people in the sample households spend more than one third of their income for buying food.
- The nature of the employment is not very sound and the status of the income of the 37 percent of the people is very less compared to other sample households, and they can't afford to buy food articles at the existing prices.
- 19 percent of the households strongly agreed that, they feels scarcity as a chronic problem now a days.
- 29 percent of the people do not worry about the market rates; they are ready to buy the food items at any cost.

- The people in the sample households are more concentrated in the additional work to get money and the borrowed money; and the respondents in the Thrissur district are most favouring this view.
- In the majority of the food items, income is the major determining factor of the food articles in the sample households and the second determining factor for the majority of the sample households is the tastes and preferences.

#### **6.2.4 Impact of public intervention on Kerala's food security**

- The major public interventions by the government are classified into Public Distribution System (PDS), Mid Day Meal Scheme (MDMS), Integrated Child Development Scheme (ICDS), Mahatma Gandhi National Rural Employment Programme (MGNREGA), and National Food Security Act (NFSA).
- The number of APL card holders increased slightly to 62.64 lakh in 2015-16, from 62.52 lakh in 2014-15. There are 5.82 lakh AAY card holders in 2015-16 which was 5.83 lakh in 2014-15.
- Out of the total ration card holders of 78.36 lakhs in 2014-15, the APL card holders are 49.85 lakhs and 24.94 lakh in the category of BPL and AAY categories. The total number of ration card holders increased throughout the years and very high increase in the case of AAY categories throughout the years.
- Under the National Food Security Act (NFSA), the total number of card holders are more than 35 lakhs and the beneficiaries almost crossed 1.5 crore people. In the non-priority groups, the ration card holders almost crossed 45 lakhs and the beneficiaries crossed almost 1.8 crore people.

- The total ration cardholders of NFSA and NFSA category crossed almost 80 lakhs and the beneficiaries almost crossed 3.4 crore people.
- In the case of wheat, almost 49 percent of the people purchase their food items from PDS on monthly basis and it was high in Palakkad district. Among the sample households, they are reluctant to purchase sugar and others from PDS across the districts.
- Only 18 percent of the people access their food from fair price shops for their food requirements in the above the 2 kilometer.
- The top most of the people in the sample households do not bother about the entitlements, prices etc from ration shops, but it is very small part of the population. Among the districts, peoples from Thrissur district always keenly observe the ration entitlements per month.
- Almost 53 percent of the population opined that the allotted quota of ration items is adequate for their daily living. But 26 percent of the people strongly disagree that, they do not get enough quantity of ration items or allotted quota of ration items is not adequate.

### **6.3 Validity of hypotheses**

- The first hypothesis to be tested was “There is significant relation between the supply and demand of food grains”. The data provided by the Kerala planning board and primary survey data validated this hypothesis. Until 1980’s the production of rice in the state was showed a declining trend and from the 20<sup>th</sup> century onwards the declining ratio has increased severely. Due to the shift in the cropping pattern of food crops to cash crops to earn quick profit. During the course of survey the households also admitted this view. Over the years the

internal production of rice in the state was declined and the dependence on other states for our food grain requirements has increased. Hence based on the data evidences and feed backs this hypothesis can be accepted.

- The second hypothesis to be tested was “There is significant relation between the availability, accessibility and affordability of food security”. The data presented in the previous chapters indicated that, a systematic relationship is seen between the availability, accessibility and affordability of food security. The availability channel acquired through internal production external supply and the contribution of Public Distribution System (PDS). The feasibility of the households to purchase the food grains from the nearby shops and fair price shops are under the channel of accessibility. When there is a link between these two, naturally it leads to the third channel; affordability of food security. It is assessed through the purchasing power of the households and their employment status. There is an inter relationship between these three channels and it lead to the sustainable food security. Hence based on the study there are many evidence to accept the hypothesis.
  
- Third hypothesis is to be tested “There is significant relation between the determining factors of rural food basket and the utilization of the provisions of Public Distribution System (PDS). In the present study income, taste preferences and price of food grains are the major determining factors of the rural food basket. The majority of the households in the rural areas are depending on the provisions of PDS and only a minor part of the population is not willing to purchase food grains from the PDS due to their income level and their preferences of food habits. As a consequence of these factors, it is observed that there is no relationship between the determining factors of rural food basket and the utilization of PDS. Thus based on the available evidences, this hypothesis can neither be accepted nor rejected for the time being.

## 6.4 Policy Implications

- The performance of agriculture sector and the growth of food security are closely connected. Hence, the policy decisions on strengthening agricultural sector improve the food security situation in the state. This is possible by intensive farming, food crops oriented cultivation practices and its value addition.
- Kerala deserves immediate and adequate policy attention on the food security in the production and distribution channels. To protect the food availability, accessibility and affordability of the rural households cannot be effective until the proper cropping pattern strategies for the production aspect and the better distribution channels carried out by the government authorities.
- It is high time for the government to make the farmers aware about the present food situation in the state and give more encouragement for the food oriented cultivation in the state and through it reduce the dependence on other states for our daily requirements.
- Rapid increase in requirement ratio of food grains needs more food items to maintain the stability for the food needs. So the government needs to promote targeting distribution channels to the needy people and promote homestead cultivation in their own land.
- It has to be ensured that the food grains distributed through the ration shop are in accordance with the consumption preferences and requirements of the people in the state and exclude the high income people and it more narrowly concentrated to the targeted needy people.



- A significant policy decision to augment the availability of food grains in the state is the immediate need of the hour. So the proper strategies have to be maintained for the improvement in the production and distributional aspects of food security in the state.

## **6.5 Conclusion**

The study concluded that food insecurity is the major problem in Kerala because most of the requirements were satisfied through the dependence on other states and PDS also plays very crucial role in the supply of food grains. Majority of the households purchased their requirements of food items from market using their own money and also the households depend on Public Distribution system. In majority of the food items, income is the major determining factor and the second determining factor for the majority of the households is the tastes and preferences. If we are not bothered about the self sufficiency in the requirement of our food grain production and needs, then in the near future, food security will be the prime challenge in the state.

## **6.6 Limitations of the study**

- The study is based on the data collected from the rural households from three districts. The structure of population in these districts is mixed with urban and rural population, so the concentration of rural households gives only the partial picture of the study.
- The high income category of households and their taste and preferences are seen in some of the households in rural areas. This may affect the comparison of different factors of rural households' food preferences and the real picture of rural household structure.

- The allocation of food grains to the various categories (APL, BPL, AAY, ANP) depend on the criteria for determining the inclusion and exclusion of the people in the households.
- Because of the traditional culture of food habits among the households their consciousness results may likely to be influenced by outliers.
- The data on import of food grains from other countries to Kerala are not available and the dependence on other states for food grains is estimated with the internal production in the state and the PDS contribution.

## **6.7 Contribution of researcher**

The previous studies held in Kerala mainly concentrated on urban areas and the studies are focused on the macro aspects only. This study is very comprehensive and it covers 509 households in the major food producing districts in Kerala. The merit of the thesis is, the major areas of food security like, area, production and yield of major food grains, the determining factors of food articles in rural aspects and the public distribution channels are covered. Hence the study is humble addition to the available literature on this topic in Kerala.

## **6.8 Areas of further research**

- The subject of food security is vast one and further studies are possible in every aspect of the subject.
- The studies on policies and programmes may be undertake by the government for the improvement of food security and its effectiveness in compare it with different districts.

- More detailed studies relating to calorie intake, nutritional status and consumption practices are to be encouraged.
- Studies may be needed for the maintenance of quality of food grains and reducing the targeting errors in the public distribution channels.

# **SELECTED BIBLIOGRAPHY**

Ahmad, M. F., & Haseen, S. (2012). The Performance of India's Food Grains Production: A Pre and Post Reform Assessment. *International Journal of Scientific and Research Publications*, 2(3), 1-6.

Alagh, Y. K. (1995). Poverty and Food Security: Toward a Policy System for Food Security. *Economic and Political Weekly*, A142-A150.

Bigman, D. (1982). Coping with hunger: Toward a system of food security and price stabilization.

Chand, R. (2005). Whither India's Food Policy? From Food Security to Food Deprivation. *Economic and Political Weekly*, 1055-1062.

Chang, C. C., Lee, H. L., & Hsu, S. H. (2013). Food security: global trends and regional perspective with reference to East Asia. *The Pacific Review*, 26(5), 589-613.

Cullet, P. (2005). Seeds regulation, food security and sustainable development. *Economic and Political Weekly*, 3607-3613.

Deaton, A., & Drèze, J.(2009). Food and nutrition in India: facts and interpretations. *Economic and political weekly*, 42-65.

Dev, S. M. (1996). Food Security: PDS vs EGS: A tale of two states. *Economic and Political Weekly*, 1752-1764.

Devi, T. S., Balasubramanian, R., & Kumar, B. G. (2016). Impact of Social Welfare Programmes on Household Food Security—An Economic Analysis in Tamil Nadu. *Advances in Life Sciences*, 5(13), 5487-5496.

Dorosh, P. A. (2004). Trade, food aid and food security: Evolving rice and wheat markets. *Economic and political weekly*, 4033-4042.

George, P. S. (1994). Food security in South Asia: performance and prospects. *Economic and Political Weekly*, 1092-1094.

Gunasekera, D., Newth, D., & Finnigan, J. (2011). Reconciling the Competing Demands in the Human- Earth System: Ensuring Food Security. *Economic Papers: A journal of applied economics and policy*, 30(3), 296-306.

Himanshu, S. A., & Sen, A. (2013). In-kind food transfers-I. *Economic and Political Weekly*, 48, 46-54.

Hussain, M. (2004). Food Security and the North-East. *Economic and Political Weekly*, 4515-4516.

- Ibnouf, F. O. (2009). The role of women in providing and improving household food security in Sudan: Implications for reducing hunger and malnutrition. *Journal of International Women's Studies*, 10(4), 144.
- Kothari, A. (2002). Environment, food security and natural resources: Lacunae in Tenth Plan approach paper. *Economic and Political Weekly*, 289-292.
- Krishnaraj, M. (2005). Food Security: How and for Whom?. *Economic and Political Weekly*, 2508-2512.
- Krishnaraj, M. (2006). Food security, agrarian crisis and rural livelihoods: implications for women. *Economic and Political Weekly*, 5376-5388.
- Lang, T., & Barling, D. (2012). Food security and food sustainability: reformulating the debate. *The Geographical Journal*, 178(4), 313-326.
- Lieten, G. K. (2003). Child Labour and Food Security. *Economic and Political Weekly*, Vol.38, No.33, 3467-3469
- Maji, S., Bera, B. K., & Nandi, A. K. (2012). An economic assessment of food and nutritional security of West Bengal and India. *Journal of Crop and Weed*, 8(2), 58-64.
- Masiero, S. (2015). Redesigning the Indian food security system through e-governance: The case of Kerala. *World Development*, 67, 126-137.
- Mujumdar, N. A. (1997). Food Security, Price Stability and the Budget. *Economic and Political Weekly*, 1201-1203.
- Mukherjee, A. (2009). Securing Food Security in the Asia-Pacific Region: A Partial Analysis. *United Nations-Asia and Pacific Centre for Agricultural Machinery, Beijing*.
- Nagpal, S. (1999). Food Security in Hindukush Himalaya. *Economic and political weekly*, 2717-2720.
- Narayanan, S. (2014). The National Food Security Act vis-à-vis the WTO agreement on agriculture. *Economic & Political Weekly*, 49(5), 41.
- Nesadurai, H. E. (2013). Food security, the palm oil–land conflict nexus, and sustainability: a governance role for a private multi-stakeholder regime like the RSPO?. *The Pacific Review*, 26(5), 505-529.
- Nnadi, F. N., Chikaire, J., Echetama, J. A., Nnadi, C. D., Okafor, O. E., & Utazi, C. O. (2012). Role of women in improving household food security in Owerri North Area of Imo State, Nigeria. *Journal of Emerging Trends in Engineering and Applied Sciences*, 3(5), 839-844.

- Obayelu, A. E. (2012). Households' food security status and its determinants in the North-Central Nigeria. *Food Economics*, 9(4), 241-256.
- Otsuka, K. (2013). Food insecurity, income inequality, and the changing comparative advantage in world agriculture. *Agricultural Economics*, 44(s1), 7-18.
- Panth, A. S.(1997). Social Networks and Food Security in Rural Karnataka. *Economic and Political Weekly*, 756-758.
- Parasuraman, S., & Rajaretnam, T. (2011). Agriculture, food security and nutrition in Vidarbha: a household level analysis. *Economic and Political Weekly*, 42-50.
- Patnaik, U. (1996). Export-oriented agriculture and food security in developing countries and India. *Economic and Political Weekly*, 2429-2449.
- Persaud, S., & Rosen, S. (2003). India's consumer and producer price policies: implications for food security. *Food Security Assessment*, 2003, 32-9.
- Peter Timmer, C., & Dawe, D. (2007). Managing food price instability in Asia: a macro food security perspective. *Asian Economic Journal*, 21(1), 1-18.
- Raghavan, M. (2006). Food Security or Politics?. *Economic and Political Weekly*, 2057-2059.
- Rao, I. K. (1993). An Experiment in Food Security. *Economic and Political Weekly*, 1911-1914.
- Rao, N. (2005). Gender equality, land rights and household food security: discussion of rice farming systems. *Economic and Political Weekly*, 2513-2521.
- Rao, V. M. (1992). How Secure Is Food Security?. *Economic and Political Weekly*, Vol.27, No.48, 2598-2599
- Rao, V. M. (1995). Beyond'Surpluses': Food Security in Changing Context. *Economic and Political Weekly*, 215-219.
- Rao, V. M., & Deshpande, R. S. (2002). Food security in drought-prone areas: a study in Karnataka. *Economic and Political Weekly*, 3677-3681.
- Ray, R. (2007). Changes in food consumption and the implications for food security and undernourishment: India in the 1990s. *Development and Change*, 38(2), 321-343.
- Robin, S., & Ramprasad, S. (2012). Energy security and biodiesel: implications for land use and food security. *Economic and Political Weekly*, 47(40), 66-73.

- Sachdeva, J., Kaur, B., Singh, S., & Singh, J. (2013). Impact of Women Headship on Food and Nutritional Security among Landless Households in Rural Punjab. *Journal of Agricultural Development and Policy*, 23(2), 92-102.
- Sen, A. (2011). Why not a universal food security legislation?. *Economic and Political Weekly*, 38-47.
- Shah, A. (1997). Food security and access to natural resources: A review of recent trends. *Economic and Political Weekly*, A46-A54.
- Sharma, P., & Gummagolmath, K. C. (2012). Reforming Guar Industry in India: Issues and Strategies. *Agricultural Economics Research Review*, 25(1).
- Singh, G., & Bhogal, T. S. (2008). Food Security: Key Issues and Strategies for Kerala-A Note. *Indian Economic Review*, 141-147.
- Srinivasan, P. V., & Jha, S. (1999). Food Security through Price Stabilisation: Buffer Stocks vs Variable Levies. *Economic and Political Weekly*, 3299-3304.
- Suryanarayana, M. H. (1997). Food security in India: Measures, norms and issues. *Development and Change*, 28(4), 771-789.
- Suryanarayana, M. H. (1997). Uruguay round and global food security. *Economic and Political Weekly*, 2821-2828.
- Suryanarayana, M. H., & Silva, D. (2012). Poverty and food insecurity in India: A Disaggregated regional profile.
- Swaminathan, M. (1996). Structural adjustment, food security and system of public distribution of food. *Economic and Political Weekly*, 1665-1672.
- Swaminathan, M. S., & Bhavani, R. V. (2013). Food production & availability-Essential prerequisites for sustainable food security. *The Indian journal of medical research*, 138(3), 383.
- Tandon, S., & Landes, R. (2011). The sensitivity of food security in India to alternate estimation methods. *Economic and Political Weekly*, 92-99.
- Thomas, N. (2013). Going out: China's food security from Southeast Asia. *The Pacific Review*, 26(5), 531-562.
- Thorat, S., & Lee, J. (2005). Caste discrimination and food security programmes. *Economic and Political Weekly*, 4198-4201.
- Tweeten, L. (1999). The economics of global food security. *Review of Agricultural Economics*, 21(2), 473-488.



Van Keulen, H., Kuyvenhoven, A., & Ruben, R. (1998). Sustainable land use and food security in developing countries: DLV's approach to policy support. *Agricultural Systems*, 58(3), 285-307.

Viswanathan, P. K. (2014). The rationalization of agriculture in Kerala: Implications for the natural environment, agro-ecosystems and livelihoods. *Agrarian South: Journal of Political Economy*, 3(1), 63-107.

Vyas, V. S. (2000). Ensuring food security: the state, market and civil society. *Economic and Political Weekly*, 4402-4407.

Wilde, P., & Nord, M. (2005). The effect of food stamps on food security: a panel data approach. *Review of Agricultural Economics*, 27(3), 425-432.

Ziliak, J. P. (2005). Discussant's Response to "Food Assistance Programs and Food Security". *Review of Agricultural Economics*, 27(3), 446-448.

# **APPENDIX**

## SCHEDULE

### AN ANALYSIS OF FOOD SECURITY AMONG RURAL HOUSEHOLDS IN KERALA

#### Basic Details

##### I. General Information

1. Serial No: (District Codes: ALP-1, TCR-2, PGT-3)
2. District
3. Taluk:
4. Block
5. Corporation/Panchayath/Municipality:
6. Village:
7. Name of the Head of the Household:
8. Address:
9. House No:
10. Ward No:
11. Aadhar No:
12. Name of the Informant:
13. Ration Card No:
14. The category do you belong: APL/BPL/AAY/Others (Specify.....)
15. Type of family of the Household: ----- (1-Joint Family, 2-Nuclear Family, 9-Others)
16. Members of family:
17. Religion: ----- (1-Hindu, 2-Muslim, 3-Christian, 9-Others)
18. Caste/Community (Social Group): ----- (1-General, 2-SC, 3-ST, 4-OBC, 9-Others)

19. Occupation of the Head:

(1-Agricultural Labour, 2-Coolie Worker, 3-Govt (State/Central), 4-Private,  
5-Professional, 6-Self Employed, 9-Others (Specify...))

20. Details of income generation:

(1-Cultivation, 2-Farming, 3-Other agricultural activity, 4-Salary/wage, 5-Pension, 6-  
Remittances, 9-Others)

21. Type of structure:

(1-Katcha, 2-Semi Pucca, 3-Pucca)

**II. Demographic Details**

Sl. No	Name of the member (A)	Relation to Head (B)	Sex (C)	Age (D)	Marital Status (E)	Education Status (F)	Monthly Income (G)	Pension (H)	Remarks (I)

Codes for (B): 1- Head, 2-Spouse, 3-Children, 4-Parent, 5-Others

Codes for (C): 1-Male, 2-Female

Codes for (E): 1-Married, 2-Unmarried, 3-Widowed, 4-Seperated

Codes for (F): 1-Illiterate, 2- Primary, 3-Secondary, 4-Higher Secondary, 5-Graduation, 6-Post  
Graduation and above

1. How many members stay at home always: Specify.....

Daily/Weekly/Monthly (specify.....)

### III. AVAILABILITY INFORMATION

1. Do you have own land? : 1-Yes  2-No
2. If yes, how much land you owned: Below 1 acre  1-2 acre  (specify.....)  
2-3 acre  3-4 acre  Above 5 acre
3. If is it used for agricultural purposes : 1-Yes  2-No
4. If yes, what are the crops you cultivated in the land (Yearly):

Food Items	Area	Yield/Quantity of production	Returns	Self Consumption	Sell Outside
1. Rice & Rice Products					
2. Wheat & Wheat Products					
3. Pulses & Pulse Products					
4. Salt & Spices					
5. Sugar					
6. Cereals					
7. Milk & Milk Products					
8. Edible Oil					
9. Tapioca					
10. Fruits & Nuts					
11. Meat, Egg, Fish					
12. Vegetables					
13. Roots & Tubers					
14. Beverages					
15. Miscellaneous Products					

5. If No, the use of land: ----- (Specify)
6. Do you obtain the essential food items easily? : 1-Yes  2-No
7. Do you have mortgage in land? : 1-Yes  2-No
8. Do you have lease in land? : 1-Yes  2-No
9. Do you acquire all the time enough quantity of food? : 1-Yes  2-No
10. Do you able to deal with sufficient food for all from the family income/head of the income? : 1-Yes  2-No

11. Sources of each food items:

Food Items(A)	Source(B)	Availability(C)
1. Rice & Rice Products		
2. Wheat & Wheat Products		
3. Pulses & Pulse Products		
4. Salt & Spices		
5. Sugar		
6. Cereals		
7. Milk & Milk Products		
8. Edible Oil		
9. Tapioca		
10. Fruits & Nuts		
11. Meat, Egg, Fish		
12. Vegetables		
13. Roots & Tubers		
14. Beverages		
15. Miscellaneous Products		

Code for (B): 1- Own production, 2- Purchased with own money from market  
 3- Purchased by using loaned money, 4- Purchased on credit  
 5- Receiving food as a part of wage/income, 6- PDS, 7- Others

Code for (C): 1-Easy, 2-Tough, 3-Fairly, 9- Others

12. Mention the monthly purchase and consumption of food articles in the household

Food Items	Purchase per month	Consumption per month
1. Rice & Rice Products		
2. Wheat & Wheat Products		
3. Pulses & Pulse Products		
4. Salt & Spices		
5. Sugar		
6. Cereals		
7. Milk & Milk Products		
8. Edible Oil		

9. Tapioca		
10. Fruits & Nuts		
11. Meat, Egg, Fish		
12. Vegetables		
13. Roots & Tubers		
14. Beverages		
15. Miscellaneous Products		

13. Sources of purchase per month

Grains purchased	Local Dealer		Nearby Town		Maveli Stores		Others	
	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
1. Rice & Rice Products								
2. Wheat & Wheat Products								
3. Pulses & Pulse Products								
4. Salt & Spices								
5. Sugar								
6. Cereals								
7. Milk & Milk Products								
8. Edible Oil								
9. Tapioca								
10. Fruits & Nuts								
11. Meat, Egg, Fish								
12. Vegetables								
13. Roots & Tubers								
14. Beverages								
15. Miscellaneous Products								

14. You have control on household income and expenditure in the home? :

Fully/Partially/Rarely

15. You have given the food to family members according to age and condition? :

Fully/Partially/Rarely

16. You have make obtainable the pulses, fruits, milk, non-veg items, green vegetables etc in family food throughout the year? : Fully/Partially/Rarely

17. You have aware of that enough income is essential for household nutritional security? :

Fully/Partially/Rarely

18. You know that farming is essential for household food security? : Strongly

Agree/Strongly Agree/Disagree/Strongly Disagree

19. Food articles are easily available in enough quantity throughout the year : 1-Yes

2-No

20. Purchase of food articles from PDS

Items	Quantity(In Kg)	Time of Purchase (B)	Price(Rs/Kg)
1. Rice			
2. Wheat/Atta (Specify)			
3. Sugar			
4. Others (Specify)			

Code for (B): 1-Weekly, 2-Monthly, 3- Occasionally, 4-Never

21. How much did your household spend on the following items in the last 30 days?

Items	Quantity	Price
1. Cooking Oil		
2. Firewood/Cooking fuel(Fuel & Light)		
3. Cigarette/Alcohol (Intoxicants)		
4. Drinking water		
5. Education		
6.Health		
7. Transportation		
8. Debt repayment		



9. House maintenance/electricity/water		
10. Shopping (Clothing & Footwear)		
11. Farming (seeds, Fertilizer etc...)		
12. Celebrations/social events etc.		
13. Food & Beverages		
14. Entertainment		
15. Others		

22. Your household typically maintains the stocks of rice or other staple foods? :

Agree/Strongly Agree/Disagree/Strongly Disagree

23. If Agree/Strongly Agree, how many days will these stocks last the household? -----  
days/months

24. Among the activities above which one have been the 2 most important activities  
sustaining your income (in terms of amount of money generated) in the last 30 days.

a. Main activity-----

b. Second activity-----

25. How many meals of food do you usually eat every day? (Specify.....)

a. Breakfast..... b. Lunch.....

c. Dinner.....

#### **IV. ACCESSABILITY AND AFFORDABILITY INFORMATION**

1. There is transport facility available for sale and purchase of food items? :

Agree/Strongly Agree/Disagree/Strongly Disagree

2. There is market (near by) for sale and purchase of different food items? :

Agree/Strongly Agree/Disagree/Strongly Disagree

3. Your family is able to afford all three meals a day? : Agree/Strongly

Agree/Disagree/Strongly Disagree

4. What proportion of your family income is spent in buying food? : One third or less/More  
than one third/Do not know

5. The rise in price of essential food items affected your families intake of food grain? :

Agree/Strongly Agree/Disagree/Strongly Disagree

6. You have to worry as to how you will arrange money to purchase your family's next  
meal? : Always/Sometimes/Never

7. If always/sometimes, what is the reason :
8. Your family gets 100 days employment under MGNREG Act, 2005? :Agree/Strongly  
 Agree/Disagree/Strongly Disagree
9. Do you have any fair price shops in this village or areas? : 1-Yes  2-No
10. Distance between your home and the ration shops : 1- Below 2 Km  Above 2 Km
11. How do you know about that the availability and the supply of ration items in the fair price shop? : 1- Notice board  2- Friends and Relatives
12. You are aware of your ration entitlement per month? : Always/Sometimes/Never
13. You are received monthly ration items regularly from the fair price shop? :  
 Always/Sometimes/Never
14. You get quality ration items from the ration shops? : Agree/Strongly  
 Agree/Disagree/Strongly Disagree
15. The allotted quota of ration items is adequate your family? : Agree/Strongly  
 Agree/Disagree/Strongly Disagree
16. You feel that scarcity is a chronic problem for you? : Agree/Strongly  
 Agree/Disagree/Strongly Disagree
17. You are aware about the market rates? : Always/Sometimes/Never
18. Has the household experienced any food shortage over the past 12 months? : 1-Yes   
 2-No
19. When you feared that you would not have enough food for the family, what did you do and on what did you depend mostly to get the food you needed?
- 1- Additional work to get Money
  - 2- Borrowed money
  - 3- Accepting help from friends and relatives
  - 4--Selling some assets or personal household goods
  - 5-Accepting charities
  - 6- Could not do anything
  - 7-Others

**V. SPECIFIC INFORMATION**

1. What are the determining factors of your food articles? :

Food Items	Income	Taste & Preferences	Interest of the family	Availability	Convenience	Locally grown food	Price	Others
1. Rice & Rice Products								
2. Wheat & Wheat Products								
3. Pulses & Pulse Products								
4. Salt & Spices								
5. Sugar								
6. Cereals								
7. Milk & Milk Products								
8. Edible Oil								
9. Tapioca								
10. Fruits & Nuts								
11. Meat, Egg, Fish								
12. Vegetables								
13. Roots & Tubers								
14. Beverages								
15. Miscellaneous Products								

2. Mention the constraints being faced in household food security:

- 1- High cost of food items
- 2- Lack of storage facility
- 3- Inadequate marketing facilities
- 4- Inadequate food availability
- 5- Poor quality of available food items
- 6- Cultural inhibition in consumption of some food items
- 7- Lack of knowledge regarding food security practices
- 8- Lack of employment opportunities throughout the year
- 9- Others

3. Are you getting any food assistance from anganwadis nearby you: 1.Yes  No   
 If yes, what are the food items you got: (Specify.....)
4. Are you aware of the government programmes to enhance the food security of the rural poor: 1.Yes  2.No
5. Do you know about the NFSB for enhancing the food security of the people: 1.Yes   
 2.No
6. Impact/Effectiveness of public intervention on food security :

Public Intervention	Impact/Effectiveness on food items				
	Easily Available	Affordable Price	Quick Accessable	Quality food items	Others
1. PDS/Maveli Stores/Supplyco (Specify)					
2.ICDS/Anganwadi					
3. Mid-Day Meal Scheme					
4. MGNREGA					
5. NFSM					
6. Others					

7. Mention the suggestions in household food security:
- 1-Emphasis on organic farming by minimizing use of chemicals
  - 2-Effort for increasing farm production
  - 3- Ensuring proper food storage facilities
  - 4- Provision of adequate marketing facilities
  - 5- Ensuring quality food supply at reasonable prices
  - 6- Awareness and training regarding food security management practices
  - 7- Others

Any remarks by the investigator.....

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