

Study No.: 139

**IMPACT OF EMERGING MARKETING CHANNELS IN AGRICULTURE  
-BENEFIT TO PRODUCER-SELLERS AND MARKETING COSTS  
AND MARGINS OF ORANGE AND POTATO IN ASSAM**



**Dr. Gautam Kakaty & Sri Debajit Borah**

**Agro-Economic Research Centre for North East India  
Assam Agricultural University  
Jorhat-785013, Assam**

**2011**

Study No.: 139

**IMPACT OF EMERGING MARKETING CHANNELS IN AGRICULTURE  
-BENEFIT TO PRODUCER-SELLERS AND MARKETING COSTS  
AND MARGINS OF ORANGE AND POTATO IN ASSAM**

**Dr. Gautam Kakaty & Sri Debajit Borah**

**Agro-Economic Research Centre for North East India  
Assam Agricultural University  
Jorhat-785013, Assam**

**2011**

**General Guidance**

Dr. A. K. Das

**Project in-charges & Report Writing**

Dr. Gautam Kakaty

Sri Debajit Borah

**Field Investigation and Data Collection**

Dr. Gautam Kakaty

Sri Debajit Borah

Sri Rupam Kr. Bordoloi

**Tabulation**

Dr. Gautam Kakaty

Sri Debajit Borah

Dr. Moromi Gogoi

---

---

## PREFACE

The present study on “Impact of Emerging Marketing Channels in Agriculture-Benefit to Producer-Sellers, Marketing Costs and Margins of Orange and Potato in Assam” was undertaken at the instance of Ministry of Agriculture, Government of India.

An efficient marketing system is indispensable for the success of any agricultural production programme. Marketing is an important link in the chain of production activities of agricultural sector. Organized marketing therefore, is a precondition to sustain production programme, more particularly, in respect of horticultural crops. Marketing of horticultural crops in Assam is largely unorganized and is in the hands of intermediaries such as pre harvest contractors, wholesalers, retail traders, etc.

Presently, the scenario of agricultural marketing in Assam is changing gradually because of the changes made in the Agriculture Produce Market Committee (APMC) Act through the amendments since 2006 and the emerging marketing concept like direct marketing, contract farming, corporate entry etc. have started to become popular among the farming communities. In the present study, an attempt has been made to estimate the costs and margins of producers and buyers and to study the degree of market efficiency, constraints faced by the farmers and other market functionaries in traditional marketing channels (TMC) and emerging marketing channels (EMC) of agriculture in Assam.

The study is based on a total sample of 200 households, 100 of which were under emerging marketing channel and rest belonged to traditional marketing channel.

I am grateful to Dr. Anand Vadivelu and Dr. Nilabja Ghosh, Co-ordinators of the study, Institute of Economic Growth, Delhi University for guiding our research team all throughout the study and giving valuable comments on the draft report which have duly been incorporated. I am also grateful to the officials of the State Government Departments for their sincere help and cooperation during the study. Special mention, in this context may be made of the District Agricultural Officers of Tinsukia and Nagaon district of Assam. I profusely thank all the sample respondents for their genuine interest and cooperation during the field surveys.

Like all the studies, this study is also a joint output of the Centre. I am grateful to Dr. Gautam Kakaty and Sri Debajit Borah who meticulously prepared the report of the study. The names of the research staff associated with the study have been mentioned elsewhere in the report.

I hope that the results of the study will be useful for the planners, policy makers and researchers.

(Anup K. Das)  
Director i/c  
AERC, Jorhat

---

---

## CONTENTS

<b><u>Chapters</u></b>	<b><u>Page</u></b>
<b>Preface</b>	<b>i</b>
<b>List of Tables</b>	<b>ii-iii</b>
<b>List of Figures &amp; Boxes</b>	<b>iv</b>
<b>List of Abbreviations</b>	<b>v</b>
<b>Chapter - I</b>	<b>Introduction</b>
	<b>1-12</b>
<b>Chapter - II</b>	<b>Agricultural Marketing Reforms: Traditional and Emerging Marketing Methods</b>
	<b>13-32</b>
<b>Chapter - III</b>	<b>Sampling Methodology and Socio-Economic profile</b>
	<b>33-65</b>
<b>Chapter - IV</b>	<b>Comparison of the Benefits and Constraints for the Agents Trading in the TMC and EMC</b>
	<b>66-92</b>
<b>Chapter - V</b>	<b>Summary, Conclusion and Policy Implications</b>
	<b>93-106</b>
<b>References</b>	<b>107-109</b>
<b>Annexure</b>	<b>110-111</b>

## List of Tables

Table No.	Title	Page No.
1.1	Respondent wise sample sizes for the survey	11
2.1	Market Infrastructure and Processing Unit Developed	27
3.1	Break downs of sample size	34
3.2	Profile of the Sample Districts and Assam at a glance	38
3.3	Farm size wise Number and Area of Operational Holdings of the selected Districts and Assam	39
3.4	Land Use Pattern of Nagaon, Tinsukia and all Assam	39
3.5	Season wise Irrigated Area in the Sample Districts and Assam	40
3.6	Cropping Pattern of the Sample Districts and Assam as a whole	40
3.7	Occupational Distribution of Sample Districts and Assam according to 2001 Census	41
3.8	Length of PWD Roads by Type in sample districts of Assam in 2009-10 with Road Density excluding NH	41
3.9	Length of roads of sample district according to different classes under PWD in Assam, 2009-10	42
3.10	Number of Village Electrified in the Sample Districts and all Assam	42
3.11	Gross District Domestic Product of sample districts and GSDP of Assam at factor cost, 2007-08 (Provisional)At current prices	42
3.12	Gross District Domestic Product of sample districts and GSDP of Assam at factor cost, Assam, 2007-08(Provisional) At constant (1999-2000) prices	43
3.13	Religion and Caste of the sample Farmers growing Orange	43
3.14	Religion and Caste of the sample Farmers growing Potato	44
3.15	Economic Condition of the sample Farmers- Orange	44
3.16	Economic Conditions of the sample Farmers- Potato	45
3.17	Age and Educational Status of the sample Farmers- Orange	46
3.18	Age and Educational Status of the sample Farmers- Potato	46
3.19	Transport and Farm Machinery Assets of the sample Farmers- Orange	47
3.20	Transport and Farm Machinery Assets of the Sample Farmers- Potato	47
3.21	Land Holding Pattern of the Sample Farmers- Orange	48
3.22	Land Holding Pattern of the Sample Farmers- Potato	49
3.23	Cropping Pattern of the Sample Orange Growers	49
3.24	Cropping Pattern of the Sample Potato Growers	50
3.25	Farming Methods used by the sample Orange Farmers in all crops area	51
3.26	Farming Methods used by the sample Potato Farmers in all crops area	51
3.27	Chemical Composition of Mandarin	52
3.28	Area, Production and Productivity of Orange in Assam and Tinsukia District	54

3.29	Chemical Composition of Potato	57
3.30	Area, Production and Productivity of Potato in Assam and Nagaon District	58

<b>Table No.</b>	<b>Title</b>	<b>Page No.</b>
4.1	Average Net Operated Area of Sample farmers according to farm size groups	66
4.2	Characteristics of Sample Orange Growers as per land holding Classification	67
4.3	Characteristics of Sample Potato Growers as per land holding Classification	67
4.4	Modern Practices and Methods used by Sample Farmers	68
4.5	Comparison of labour hiring and labour cost share in total cost	69
4.6	Production and Cost of cultivation of Orange and Potato of the Sample farmers	70
4.7	Average Marketing Cost of Marketed Product of the sample Farmers	71
4.8	Disposal of Marketed Product of the sample Farmers	72
4.9	Average Cost and Margin of Marketed Product of the sample Farmers	72
4.10	Economics of Cultivation of the Sample Farmers	73
4.11	Per Quintal Post Harvest Losses	74
4.12	Reasons for Post Harvest Losses	74
4.13	Temporal Distribution of Sales	75
4.14	Details about Marketing Information	76
4.15	Access to Inputs from the Buyer	77
4.16	Perception of the Market Infrastructure	78
4.17	Perception of the Farmer on Other Market Intermediaries, Price Spread and Constraints in Agricultural Marketing	79
4.18	Price Spread of Orange in Traditional Marketing Channel - I	81
4.19	Price Spread of Orange in Traditional Marketing Channel - II	82
4.20	Price Spread of Orange in Traditional Marketing Channel – III	84
4.21	Price Spread of Orange in Emerging Marketing Channel - I	85
4.22	Price Spread of Orange in Emerging Marketing Channel - II	86
4.23	Price Spread of Potato in Traditional Marketing Channel - I	87
4.24	Price Spread of Potato in Traditional Marketing Channel - II	88
4.25	Price Spread of Potato in Traditional Marketing Channel – III	89
4.26	Price Spread of Potato in Emerging Marketing Channel - II	90
4.27	Estimated Modified Measure of Market Efficiency (MME)	92

## List of Figures & Boxes

Figure No.	Title	Page No.
3.1	Map of Assam (districts)	35
3.2	Map of Tinsukia District of Assam	36
3.3	Map of Nagaon District of Assam	37
3.4	Flow Chart of the Major Traditional Marketing Channels for Orange	61
3.5	Flow Chart of the Major Traditional Marketing Channels for Potato	61
3.6	Flow Chart of the Major Emerging Marketing Channels for Orange	64
3.7	Flow Chart of the Major Emerging Marketing Channels for Potato	64
4.1	Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – I for Orange	82
4.2	Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – II for Orange	83
4.3	Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – III for Orange	84
4.4	Percentage Share of Margins in Consumer Rupees for Emerging Marketing Channel – I (Orange)	85
4.5	Percentage Share of Margins in Consumer Rupees for Emerging Marketing Channel – II (Orange)	86
4.6	Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – I for Potato	87
4.7	Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – II for Potato	88
4.8	Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – III for Potato	90
4.9	Percentage Share of Margins in Consumer Rupees for Emerging Marketing Channel – II for Potato	91

Box No.	Title	Page No.
1	Origin of Mandarin Fruits	52
2	Citrus Production in India	53
3	History of Potato Cultivation	56



## List of Abbreviations

APMC	-	Agricultural produce marketing committee
ASAMB	-	The Assam State Agricultural Marketing Board
ASMO	-	Area Sown More than Once
AV.	-	Average
EMC	-	Emerging Marketing Channel
FCI	-	Food Corporation of India
GAP	-	Good Agricultural Practices
GCA	-	Gross Cropped Area
GDP	-	Gross Domestic Product
GIA	-	Gross Irrigated area
GIS	-	Geographical Information System
GOI	-	Government of India
ha.	-	hectare
HYV	-	High Yielding Variety
	-	Kilo gram
mha.	-	Million hectares
mt.	-	Metric tonnes
NABARD	-	National Bank for Agriculture and Rural Development
NAFED	-	National Agricultural Cooperative Marketing Federation
NERAMAC	-	North Eastern Regional Agricultural Marketing Corporation Ltd.
NCA	-	Net Cropped area
NHB	-	National Horticulture Board
NHM	-	National Horticulture Mission
NIA	-	Net irrigated Area
NSA	-	NET Sown Area
PPP	-	Public Private Partnership
Prod.	-	Production
Prodvty.	-	Productivity (Kg/ha)
Qtls.	-	Quintals
SD	-	Standard deviation
SHG	-	Self Help Group
TMC	-	Traditional Marketing Channel

# CHAPTER - I

## INTRODUCTION

### 1.1 Introduction

The increasing trend of agricultural production has drawn the attention of marketing due to its pivotal role. The new challenges emerged from the post W.T.O. regime have necessitated the strengthening of agricultural marketing system in India. In an economy like ours, production and marketing must go hand in hand. Marketing plays an important role to stimulate production and consumption and accelerates the pace of economic development of a country. Agricultural marketing deals with all the activities, agencies and policies involved in the procurement of farm inputs by the farmers and the movement of agricultural products from the farms to the consumers. Agricultural marketing involves all the aspects of market structure, both functional and institutional, based on technical and economic considerations, and includes pre and post-harvest operations, assembling, grading, storage, transportation and distribution. The expansion in the volume of farm output stimulates forward linkages, which encompasses transportation, storage, processing, packaging and retailing to the consumers. Increasing demands for money with which to purchase other goods leads to increase sensitivity to relative prices on the part of the producers and they opt for specialization in the cultivation of those crops on which the returns are the highest, subject to socio- cultural, ecological and economic constraints. The marketing system transmits the crucial price signals.

The horticultural marketing in India is highly decentralized having wide capacities, but regional disparities is still there. There has been concern in recent years on the efficiency of marketing of fruits and vegetables, because of high and fluctuating consumer prices and also due to the fact that only a small share of the consumer rupee reaching the farmers. Many committees review it and there are reports that Indian farmers are good producers but not good marketer. As early as 1976, National Commission on Agriculture pointed out the inefficiency in agricultural marketing with particular reference to fresh perishables and strongly recommended that, "It is not enough to produce a crop; it must be satisfactorily marketed." The, marketing of horticultural crops is complex especially because of perishability, seasonality and bulkiness. Fruits and vegetables are the items of daily consumption, and though perishable in nature, they constitute essential component of human diet. Cultivation of horticultural crops is more profitable than any other seasonal crops particularly, the food grain crops. Many a time, fruits & vegetables are

grown in one area but marketed in other areas in order to reap better prices. This involves long distance transport. For these purpose good roads in the interior villages is necessary. Fortunately, there are good state and national highways, but there are no good roads in the interior areas. Sale of the fruits generally takes place through pre-harvest contactors, so that the farmer gets an advanced payment and covers his risk. Vegetables are usually sold through commission agents and very little of pre-harvest contacting is done. Due to this, the net returns are generally low. The farmers usually devote more time to their field crops rather than to the orchards. If the farmer does the marketing of his produce himself, then for obvious reason the net returns would be more. In case of marketing of fruits and vegetables, producer cannot go to wholesale market or long distant market and he has to depend on some intermediaries to sell his produce. Therefore, in the marketing of fruits and vegetables costs are to be incurred for grading, packing, transport, loading/unloading, fees, etc. In addition, the intermediaries also charge some margins for them. These costs and margins determine the final price to be paid by the consumer.

Fruits and vegetables produced in India is marketed mostly either through regulated APMC markets or totally unregulated local fruit and vegetable markets. Marketing through these traditional channels is characterized by very little attention to grading, sorting and storage with weak regulation, poor handling during loading, unloading and transport resulting in loss of 30-40 per cent of the total production. Supply chains for fruits and vegetables tend to be multilayered, which has implications on the farmers' share in the final consumer price and the quality of produce due to multiple handling. In contrast to fragmented supply chains in traditional market, supply chains developed by organized retail chains are supposed to be well coordinated. (Punjabi and Sardana, 2006).

Organized agricultural marketing for commodities have been promoted in the country through a network of regulated markets. Most of the State Governments and Union Territories have enacted legislations. Agricultural Produce Market Committee (APMC) Act to provide for regulation of agricultural produce markets. While by the end of 1950, there were 286 regulated markets in the country, today the number stands at 7,157 as on 31.03.2010. Besides, the country has 21,221 rural periodical markets, about 15 per cent of which function under the ambit of regulation. (Economic Survey 2010-11, Government of India). The advent of regulated markets has helped in mitigating the market handicaps of producers/sellers at wholesale assembling level. However, the rural periodic markets in general, and the tribal markets in particular, remained out

of its developmental ambit. Agriculture sector needs well functioning markets to drive growth, employment and economic prosperity. In order to inject dynamism and efficiency into the marketing system, large investments are required for the development of post-harvest and cold chain infrastructure nearer to the farmers' field. A major portion of this investment is expected from the private sector, for which an appropriate regulatory and policy environment is necessary. Alongside, enabling policies need to be put in place to encourage procurement of agricultural commodities directly from farmers' field and to establish effective linkage between the farm production and the retail chain and food processing industries. Accordingly, amendment to the State APMC Act for deregulation of marketing system in the country is suggested to promote investment in marketing infrastructure, motivating corporate sector to undertake direct marketing and to facilitate a national integrated market.

The importance of agricultural marketing reforms must be realised in achieving the target growth of 4 per cent in agricultural GDP, which in turn would be crucial in meeting the GDP growth target of 9 per cent during the XI<sup>th</sup> plan. Further, reforms could bring in inclusive growth, as 60 per cent of the rural population and 52 per cent of the national workforce is directly affected by agriculture. Though the share of agriculture in GDP has declined to 17 per cent, it still accounts for 48 per cent of rural GDP.

The Ministry of Agriculture has formulated a Model Law on agricultural marketing for guidance and adoption by the State Govt. The legislation provides for establishment of private markets/yards direct purchase centres, consumers/farmers market/yards direct sale and promotion of public-private partnership in the management and development of agricultural markets in the country. Provision has also been made in law for constitution of State Agriculture Produce Marketing Standards Bureau for promotion of grading, standardization and quality certification of agricultural produce. This would facilitate pledge financing, direct purchasing, forward/future trading and exports.

The amended act aims at complete transformation of agricultural marketing in India to make it more market and growth oriented. Under the new act, private players will be allowed to open and operate agriculture markets, where farmers can sell their produce. It will end the state monopolies and result in competitive pricing for the farmers. There is no compulsion on the farmers to bring their produce to the market yard. They can directly sell the produce to private parties, food chains and retailers. Contract farming has been allowed so that the food processing

and retail industry can get desired quantity and quality of the produce, without any need to route it through the notified markets. Despite the radical changes that the model APMC Act can usher in, so far, only seventeen States/UTs have amended their APMC Acts and the remaining states are in the process of doing so.

Indian agriculture has undergone a phenomenal transformation during the past five decades. The metamorphosis was brought by not only technological changes such as green revolution, but also by institutional innovations in delivering farm inputs and marketing of output. Contract farming is one such institutional initiative undertaken in recent years to address some of the problems faced by the Indian farmers. The National Agriculture Policy 2000, announced by the Government of India, seeks to promote contract farming by involving the private sector to “accelerate technology transfer, capital inflow and assured marketing of crop production”(Asokan, 2005).

In India, with growing distortions in the supply chain for agricultural commodities, there is need for greater efficiency in the supply chain. The emerging marketing channels are supposed to reduce the transaction costs and ensure that the high margins that certain intermediary agents get in the regular marketing channels is reduced. Some of the emerging channels include group-marketing, e-trading, direct marketing, contract farming, modern terminal markets, future trading, ITC choupal, Self Help Groups and NGOs in the marketing chain.

Agricultural marketing functions are considered as the main planks of economic development in a state like Assam. An efficient marketing system is indispensable for the success of the agricultural production programme, which is launched in recent years. Marketing is an important link in the chain of production activities of agriculture sector. Organized marketing therefore, is a precondition to sustain production programme, more particularly, in respect of horticultural production. Marketing of horticultural crops in Assam is largely unorganized and is in the hands of intermediaries such as retail traders, wholesalers, pre harvest contractors and others.

There is a network of rural markets (Haats) in Assam. These are often poorly linked in terms in information and transport with one another. These unregulated markets are likely to become even more important as demand increases in the urban areas. The price variations are wide in different markets due to the missing market link. Therefore, strong interventions in the

Commodity Marketing have become the need of the hour. To assist producers to adapt and compete more effectively in changing market situations, several initiatives are to be supported to liberalize marketing arrangements in Assam and develop closer connections between extension activities and the operation of the market supply chain including, (i) Proper amendment of the Assam Agriculture Produce Committee Marketing Act to facilitate private sector involvement in contract production and development of wholesale markets, (ii) Making marketing extension a core aspect of extension activities in all the Departments (balancing the traditional focus on production) and establishing closer working relationship with traders associations, (iii) Change line Department emphasis from short term price information to longer-term market intelligence and (iv) Piloting of an Enterprise Development Grant Fund.

Enhanced market extension service will be provided to farmer groups and Self Help Groups (SHGs), co-operatives and agri-business houses. Emphasis would be on ATMA districts, their needs and requirement would be feed into the District Agriculture Development Plans and Block Action Plan. The local extension agents will work with the groups to first help diagnose their needs and constraints and then help from draw up an action programme. Extension activities will be highly practical and will include training programmes, presentation by trader and processors; market research carried out by farmers themselves with support from market extensionists; and action programmes to consolidate loads and facilitate bulk transport. To achieve this, change in focus from a traditional production orientation to a more commercial one will require the training of field staff. Training courses will cover the topics, e.g information gathering, resource audits, market research, diagnosing farmers' constraints and opportunities forming and working with farmer groups, preparation of action plans, marketing extension techniques, working with the private sector and farmers, market information – what it is, how to access and use it, including post harvest advisement.

The economy of Assam continues to be predominantly agrarian; the dependence of rural labour force on agriculture and allied activities was nearly 53 per cent as per population Census, 2001. Assam is traditionally a horticultural State due to its unique agro-climatic condition, which permits growing wide range of horticultural crops like various fruits, vegetables, flowers, spices, nuts, tuber crops and medicinal and aromatic plants. Assam falls under the World citrus belt.

At present, the area under horticultural crops in Assam is 5.40 lakh hectares, which is 14 per cent of the Net Cropped Area of the State. This sector annually produces 14.02 lakh MT of fruits, 39.16 lakh MT of vegetables, 2.18 lakh MT of spices besides nut crops, flowers and medicinal & aromatic plants (Economic Survey 2009-10. Govt. of Assam). The state is surplus as regards to fruits, vegetables and spices production. The important fruit crops grown include orange, pineapple, banana, lime, lemon, jackfruits, guava, litchi, mango etc. and more than 10 minor fruits. In case of vegetables, mention may be made of potato, various cole crops and brinjal. Major spices grown are chilly, coriander, black pepper, ginger and turmeric. In spite of all these promising potentially, horticulture sector is still in infant stage.

It is expected that the study, once accomplished, will be useful to assess the efficacy of the emerging marketing channels vis-a vis traditional marketing channels.

### **1.2 Objectives of the Study:**

The study is proposed with the following main objectives:

- i) To estimate the share of the farmer in the consumer rupee in emerging marketing channels *vis-à-vis* the traditional marketing channels.
- ii) To estimate the degree of market efficiency and incidence of post harvest losses in emerging marketing channels *vis-à-vis* traditional channels.
- iii) To study the superior market practices and services provided by different agencies in the emerging marketing channels *vis-à-vis* traditional marketing channels.
- iv) To study the constraints faced by the farmers and different market functionaries in the emerging marketing channels *vis-à-vis* traditional marketing channels.

### **1.3 Review of Literature**

Literature on emerging marketing channels is very scanty. Emerging marketing channels is a new concept to the farming community. However, an attempt has been made here to highlight the marketing costs and margin of the different market functionaries and producer's share in consumer's rupee worked out by the earlier workers.

Mahalanobis (1972) studied the price spreads of orange in Calcutta market and found that producer's share was only 22.50 per cent of the consumer's rupee. The lower percentage to the producer was mainly due to transportation cost and handling charges etc. The share of

middlemen was found 33.90 per cent of the consumer's rupee and the margin of the retailers accounted for 28.75 per cent of the total price spread at different market functionaries' level.

Gopalan and Gopalan(1991) found that agricultural marketing system in India suffered from severe constraints like high costs, existence of middlemen, storage and transport bottlenecks and lack of market information among the farmers. This article used a case study in Tamil Nadu to evaluate various methods of raising marketing efficiency. The analysis suggested that the cooperatives had weakened the many small monopolies and malpractices of middlemen and had led to a considerable improvement in marketing efficiency. However, there is a need for timely and adequate application of farm inputs, better coverage of potato growers, grading schemes and more efficient dispersal of information among other requirements.

Saikia and Borah (1998) conducted a study on "Marketing of Pineapple and Citrus (Orange) in Assam and Meghalaya". They found four marketing channels for orange in Tinsukia market i.e. Channel-I: Producer – Retailer - Consumer, Channel-II: Producer - Middlemen/Commission agent – Retailer - Consumer, Channel-III: Producer – Middlemen/Commission agent – Wholesaler – Retailer – Consumer and Channel-IV: Producer - Middlemen/Commission agent - Merchant Wholesaler – Wholesaler – Retailer - Consumer. They found that the grower's net share in consumer's rupee was highest in channel-I (47.48 per cent) followed by 39.50 per cent in channel-II , 39.50 per cent in channel-III, and 39.50 per cent channel-IV. The middlemen's/commission agents margin was 16.47 per cent in channel II, 8.35 per cent in channel-III and 1.94 per cent in channel-IV. The wholesaler's margin was 12.80 per cent in channel-III and 6.33 per cent in channel-IV. The retailer's margin was found at 47.12 per cent in channel-I, 39.71 per cent in channel-II, 33.59 per cent in channel-III and 33.96 per cent channel-IV.

Sen and Maurya (1998) studied the marketing of vegetables in Sewapuri block of Varanasi city. It included ten sample villages for 10 vegetables and 150 sample farmers; it was conducted during 1993-94. The study revealed that for the total marketing charges (including cost of transport) payable, 65.92 per cent and 66.98 per cent were payable by the sellers (producers) ,12.22 per cent and 11.84 per cent by wholesalers and 21.86 per cent and 21.18 per cent by retailers in Chandwa and Kamachcha markets, respectively, and a little more than 28 per cent and 31 per cent of the marketing charges were accounted for by the cost of transport in the two markets. While studying, price spread between the price received by producers in selected



villages and that paid by the consumers in Varanasi city included all the marketing charges (including commission and transport charges) paid by the wholesalers and retailers. It was, also observed that the produce's share in consumer's rupee for the vegetables was the lowest for tomato and highest for brinjal in both the markets. Totally, the share of the producers was highest for vegetables with less perishability or with facilities of cold storage while it was lowest for vegetables with greater perishability. The margin of wholesalers and retailers for such vegetables (like tomato, green pea) was highest. Finally, the price spread accounted for more than 33 per cent of the price paid by the consumer for major vegetables under study.

Devaraja (1998) conducted a study in Hassan district on channels and price spread in potato marketing. He selected 200 farmers from 30 villages and 40 market intermediaries indexing 15 commission agent, 15 retailer vendors and 10 cart vendors. The study identified 3 supply chains, first chain included commission agent and retailer for the movement of produce from producer and consumer in the nearby market of Hassan. Second chain included commission agent and retailer for the movement of produce from producer and consumer to the distant market of Bangalore and third chain included commission agent and cart vendor from producer to consumer. The price spread analysis revealed that producers got 48.57, 51.15 and 52.32 per cent of the consumer's rupee in first, second and third supply chain respectively. In third chain representing distant market Bangalore, the consumer's rupee was the highest. Hence selling of produce at the distant market was found to be more profitable to the farmers. The study also revealed that the producer's net price could be increased by taking suitable measures by the Government like (a) providing cold storage facilities to producers (b) the existing system of collecting commission charges from producers should be stopped (c) providing support price facilities to producers when there is heavy price fluctuations in peak seasons (d) efficient and cheap means of transportation by the market committee (e) fluctuations in the market prices of potatoes may be eliminated by regulating and streamlining the supply by establishing potato processing plants in the vicinity of production centres for manufacturing of processed potato products.

Anil Kumar and Arora (1999) conducted a study on post-harvest management of vegetable in Uttar Pradesh hills and found that non-availability of cold storages, highly perishable nature of the vegetable, low marketing demand for the produce at the time of storage were the major problems as perceived by farmers.

Haque (2000) observed contract farming in the case of tomato farmers practiced by the Hindustan Lever Limited in Punjab. The results of the case study on contract farming in Punjab for tomato indicated that the contract farming helped in increasing the yield and income of the farmers because of the availability of high quality seeds and assured market for the produce. He found that per acre net income of tomato contract farmers was Rs.20,000.00 for Amritsar district, Rs.9,940.00 for Hoshiyarpur district, Rs.13,000.00 for Jullandhar district, Rs.14,535.00 for Kapurthala district and Rs.8,125.00 for Ludhiana district while per acre net income of potato for non-contract farmers was Rs.10,200 for Amritsar district, Rs.6,440 for Hoshiyarpur district, Rs.6,885 for Jullandhar district, Rs.8,075 for Kapurthala district and Rs.5,600 for Ludhiana district.

Susanta (2000) conducted the study on integrated post production management and food processing in India with the national objective. The study findings identifies that India produces over 200 million tones of food grains and about 132 million tones of fruits and vegetables. The unnecessary wastage of valuable commodities can be checked if they are processed into value added products or adequately distributed in different parts of the country and by improving the post harvest distribution and processing facility. If fresh fruits and vegetables and also processed fruits are evenly marketed from the place of abundance to the place of scarcity, not only will the consumer get the produce at a reasonable price but also the producer will not be found to sell at throw away prices. He further identified some of the techniques, which are not followed in our country like primary processing packing station, on farm storage, packaging, palletisation, containerization, cool/cold chain etc.

Pandey *et al.* (2003) estimated the price spread and producers and market intermediaries share in the consumer price in the channel: Producer – commission agent –retailer – consumer in potato marketing at Shimla. For the study samples of 25 potato growers, 10 commission agents and 25 retailers were selected purposively. The result showed that the producer realized around 73 per cent share in consumer's price. The retailer and commission agent earned profit of about 3.5 and 8.0 per cent of the consumer's rupee. The price spread and marketing efficiency was found to be about 27 per cent and 3 per cent, respectively.

Sreenivasa *et al.* (2007) conducted study on “Marketing losses and their impact on marketing margins: A case study of Banana, Karnataka”. To estimate the post harvest losses field level, transit and wholesale marketing level and retail marketing level was selected for the study

and they found that the margin of the retailers' after taking into account the physical loss during retailing has been negative (loss), which otherwise, was positive (profit) in the conventional estimation. Similarly, the producers' net share and wholesalers' margins also decreased substantially. It has been shown that marketing efficiency is inversely proportional to the marketing losses. The cooperative marketing has been found to be a more efficient system in terms of both operations and price. Marketing cost has been identified as the major constraint in the wholesale marketing channel and bringing down the costs, particularly the commission charges as demonstrated in the cooperative channel, would help in reducing the price-spread and increasing the producers' margin. The need for specialized transport vehicles for perishable commodities had also been highlighted.

Kakaty (2009) in the study entitled, "Potentialities of Horticultural Crops and Market Accessibilities in Assam and Meghalaya with special reference to Technology Mission for Integrated Development of Horticulture" worked out the price spread for orange in Guwahati Market. He found three marketing channels for orange (i) Producer – Retailer - Consumer, (ii) Producer - Commission Agent – Retailer - Consumer, (iii) Producer - Commission Agent-Wholesaler – Retailer - Consumer. He found that the growers' net share of consumers' rupee was highest in channel-(i) (47.45 per cent) followed by 39.00 per cent in channel-(ii) and 35.50 per cent in channel-(iii). The commission agent's margin was 21.80 per cent in channel-(ii) and 14.35 per cent in channel-(iii). The wholesaler's margin was 12.65 per cent in channel-(iii). The retailers' margin was found at 45.75 per cent in channel-(i), 34.45 per cent in channel-(ii) and 31.75 per cent in channel-(iii).

#### **1.4 Methodology for the Study and Data**

The study is based on both primary and secondary data and the methodology of the study is as follows:

##### **1.4 (a) Primary Data Survey**

The data has been collected from the following respondent by using specially designed interview schedules and questionnaires supplied by the coordinating centre (Institute of Economic Growth, Delhi) for the project

- (1) Farmers
- (2) Buyers
- (3) Retailers

- (4) Consumers
- (5) Market Committee Members

The sample sizes for the survey (as per the coordinating centre) are as presented in table -1.1

**Table-1.1**  
**Respondent wise sample sizes for the survey**

Respondents	Crop 1(Orange)		Crop 2 (Potato)	
	Traditional Marketing Channel	Emerging Marketing Channel	Traditional Marketing Channel	Emerging Marketing Channel
(1) Farmers	50	50	50	50
(2) Buyers	5	5	5	1
(3) Retailers	5	-	5	-
(4) Consumers	15	15	15	15

A focused group discussion with the members (5 nos.) of the market committees was also conducted in order to get a clear picture of market charges, market practices and market infrastructures.

The Modified Measure of Marketing Efficiency (MME) (Acharya’s approach) was calculated using the formula:  $MME = FP / (MC + MM)$ , where FP is price received by farmer, MC and MM are marketing costs and marketing margins, respectively.

**1.4 (b) Secondary Data Sources:**

The secondary data are collected from various sources including National Informatics Centre, and other State/District level published Government sources for the chosen districts viz.- Tinsukia and Nagaon of Assam. The State Marketing Act, By-laws and Regulations of State Marketing Board were accessed, analyzed & inferences were drawn accordingly.

**1.5 Limitations of the Study**

The present study has been conducted by selecting orange and potato growers from the four blocks of two districts of Assam. The selected districts are the most important districts in the State of Assam so far as the production and marketing of orange and potato is concerned. The data collected from the selected sample households were based on the reports of the respondents. The data so collected were verified from other sources like village headmen and VLEWs. If there was any doubt regarding the truth and veracity of the reports of any respondents, then the case

was verified once again after certain interval so that reliable and authentic information was recorded for the purpose of the study. Further, data on the cost of production, cost of marketing etc. were obtained by checking and cross-checking of the data reported by the respondents. The data on retail and wholesale prices of orange and potato were collected from the appropriate sources.

The study is expected to fill an important gap and throw new light into the problems of orange and potato cultivation in the state especially, in the field of marketing & its policy implications. The approach pleads for making an operational plan to promote agricultural development in general and orange & potato cultivation in particular along with efficient marketing. To translate this policy into a programme of action requires resource mobilization, infrastructure development, people's awareness & supportive/ administrative services. The implementation of the amended APMC Act is at infant stage in Assam. As compared to other advanced states of India, Assam is yet to reap the benefits of emerging market. However, an attempt has been made in this report to highlight the existing emerging marketing channels *vis-a-vis* traditional marketing channels in the State.

The findings of the present study are expected to be true under similar socio-economic & agro-technical framework as all the precautions were taken to minimize the error in collecting the required information at different levels.

### **1.6 Chapter plan, organization of the report**

The report comprises of five chapters including the introductory chapter. Second chapter highlights a background on agricultural market reforms and similarities and differences of the features of the traditional channels and emerging channels in the state. Chapter three presents the detailed information on sampling technique, methodology and socio economic profiles of the study. Chapter four contains a comparison of the benefits and constraints for the agents trading in the traditional marketing channel and emerging marketing channel. Chapter five summarizes the conclusion and policy implications of the study.

## **CHAPTER - II**

### **AGRICULTURAL MARKETING REFORMS: TRADITIONAL AND EMERGING MARKETING METHODS**

#### **2.1 Introduction**

Agricultural market reforms have been introduced in India since the Eight Five Year Plan (1992-97). As the Government needs to depend more on market forces for price stabilization and regulation, planning is now indicative more on private sector as it has a greater role to play. Normally, the market mechanism favours the richer section of the society and the poor growers are always remain at the receiving end. Hence, under new mechanism, provisions have been made to make the markets friendly towards the growers by fixing the minimum support prices. Or else, the efficiency of production, skill formation, adoption of technology and generation of marketable surplus get adversely affected. It has to be accepted that no mechanism in the market can equally distribute the fruits of development to all parts of the country at a time.

Government of India set up Several Committees and Expert Groups to suggest the direction of reforms in the field of agricultural marketing. The first was the Expert Group on Agricultural Marketing (Acharya) constituted by the Union Ministry of Rural Development in 1998. Following the constitution of this Expert Group, a major structural change occurred leading to the transfer of agricultural marketing division of Union Government from the Ministry of Rural Development to the Ministry of Agriculture. In December 2000, the Union Ministry of Agriculture constituted another Expert Committee on Strengthening and Developing Agricultural Marketing System in the Country under the chairmanship of Sri Shakneral Guru. This Committee (Guru Committee) reviewed the entire system of agricultural marketing in the country and submitted its specific recommendations to the Government in June 2001. The Expert Committee's recommendations included various legislative reforms as well as reorientation of policies and programmes (Government of India, 2001). Major recommendations of the Committee are –

1. The Government should examine all existing policies, rules and regulations with a view to remove legal provisions inhibiting free marketing system. Private Sector, Corporate and Joint Ventures need to be encouraged to set up markets for free and competitive trade.

2. By an amendment in Agricultural Produce Markets Act, the utilization of funds by the Agricultural Produce Market Committee (APMC) and State Agricultural Marketing Board (SAMB) for support services like grading, standardization, storage and pledge finance should be made mandatory.
3. Government should strengthen and institutionalize commodity exchanges and futures markets.
4. Government should remodel the functions of APMCs and SAMBs and these bodies should be headed by professionals.
5. All laws that regulate participation in the market such as licensing, controls on packaging and labeling, commodities under regulation, controls on movement and volumes, traded access to credit and dispute resolution should be comprehensively reviewed.
6. Essential Commodities Act, 1955 should be repealed.
7. Direct marketing by farmers or through SHGs should be promoted by taking it out from the APMC Act. Some common code of conduct and modalities for ownership, and operation should be prescribed.
8. Consumer organizations should be promoted to directly procure from farmers and distribute to consumers.
9. The use of IT in agricultural marketing should be promoted.
10. Substantial investment from private sector should be mobilized for creation and expansion of agricultural marketing infrastructure, which will require complementary public investment and creation of conducive legal environment.
11. A system of certified warehouses and negotiable warehouse receipts should be introduced to improve credit delivery for marketing functions. Similarly, pledge financing should be encouraged.
12. Government should design a full-fledged agricultural marketing credit policy.
13. Alcoholic beverages based on fruits and vegetables should not be clubbed with other alcoholic beverages for the purpose of excise and related laws.
14. Production of fruits, vegetables, medicinal plants, aromatic plants and spices should be brought under the definition of plantation crops.
15. NIAM should become a Centre of Excellence for Asian Region to be headed by a Technocrat, Marketing Practitioner or Academician of national/international repute.

16. A massive programme of marketing extension should be launched. Privatization of extension services with appropriate financial backup from the public sector should be encouraged. An essential requirement for this is a 24-hour TV Kisan Channel on Door Darshan.
17. SAUs and Centres of ICAR should be given a mandate for applied research in agricultural marketing. Marketing organizations should be asked to set apart some funds for marketing research.
18. Training facilities in agricultural marketing for all the stakeholders and database for marketing should be strengthened.

Subsequently, Government of India constituted an Inter-Ministerial Task Force in July 2001 under the chairmanship of Sri R.C. A. Jain, Additional Secretary, Ministry of Agriculture to suggest measures for implementation of the recommendations of the Expert Committee. The Task Force interacted with various stakeholders and identified nine priority areas. Each of these priority areas was assigned to separate Inter-Ministerial Working Groups to work out a road map for reforms and development or strengthening of each of these areas. Based on the output of Working Groups, the Task Force in May, 2002 suggested the direction of change in policies and programmes. It also recommended an implementation plan along with the identification of Ministries/organizations for implementation. Major recommendations of the Task Force are:

1. All the state governments should amend the State Agricultural Produce Marketing Regulations Act to provide *inter alia* for (a) enabling the private and cooperative sectors to establish and operate marketing services; (b) allowing direct marketing; (c) permitting contract farming; (d) rationalization of market fee; and (e) attracting agencies to take up marketing infrastructure development projects.
2. A new central scheme is formulated to provide credit linked assistance for development of general and commodity specific agricultural markets and for strengthening existing markets including wholesale and rural periodic markets.
3. On-going central schemes for storage, cold storages and cold chains should be further expanded.
4. Credit for marketing of crops (pledge financing) should be stepped up to reach a level of Rs.7000 crores by the end of 10th five-year Plan. RBI and NABARD should take appropriate measures.



5. For introduction of negotiable warehousing receipt system, CWC and SWCs should evolve commercially acceptable quality standards and develop appropriate storage infrastructure. In addition, either Negotiable Instrument Act should be amended or a new Central Legislation be enacted.
6. For promotion of Forward and Futures markets in agricultural commodities (a) FC(R) Act may be given a fresh look (b) commodity specific approach be discontinued (c) contracts should be approved based on feasibility studies. (d) the design and type of contracts should be left to be decided by the Exchanges (e) the Regulator (FMC) should be strengthened and (f) the role of commodity market regulator may be redefined to regulate all derived products.
7. The procurement under MSP policy should be decentralized by strengthening state organizations and a pilot scheme of farmer's income insurance should be launched in selected states for oilseeds, pulses, rice and wheat.
8. The purchase centres and FAQ specifications for MSP operations should be widely publicized and FAQ norms should not be relaxed frequently.
9. The MIS should be made more flexible and simple and sharing pattern of losses should be reviewed.
10. The use of IT should be extensively promoted to provide market-led extension services to farmers and other market functionaries. The on-going central scheme of establishing market information network should provide coverage to all wholesale agricultural markets.
11. Marketing research, training and extension services to all stakeholders should be strengthened. NIAM should work as nodal agency and should collaborate with SAUs, SAMBs, and Directorate of Marketing (MOA) and International Agencies involved in promoting agricultural marketing.

While the Expert Committees and Task Force were on the job, the Union Government launched two other comprehensive studies. One of these was the Millennium Study of Indian Farmers launched by the Ministry of Agriculture. In the Millennium Study, agricultural marketing was an explicit component. This study was aimed at the review of agricultural marketing scenario in the country and changes therein during the last fifty years. The draft of this study report was ready in early 2002 and the main findings were made available to the Expert Committee and Task Force. However, the final report came out in 2004. The lessons for long term policy of agricultural marketing development, drawn in the Millennium Study are –

1. State Agricultural Produce Market Acts should be drastically changed to encourage private sector or cooperatives to establish agricultural markets.
2. Holding of regular elections of APMCs and SAMBs should be made mandatory and their role should be redefined.
3. System of licensing for trading and other activities in regulated markets should be done away with.
4. A comprehensive review of ECA and other legal instruments should be undertaken with a view to simplifying and synchronizing them.
5. All 27294 rural periodic markets including those for livestock should be developed by providing infrastructural facilities.
6. Some minimum facilities of cleaning, grading, storage and packaging should be created in all the villages.
7. Necessary infrastructure in all 7161 regulated market yards/ sub-yards should be created.
8. A country wide market development plan incorporating and linking the hierarchy of market places should be prepared and implemented.
9. Massive private investment in link roads, storage structures, cold storage, refrigerated/reefer vans, packaging services and value addition/ processing facilities should be attracted by relaxing the regulatory framework and making complementary public investment.
10. Direct and group marketing by the farmers should be encouraged.
11. Institutional mechanism be evolved or simplified to promote contract farming, futures trading and negotiable warehouse receipt system.
12. Provision of institutional credit for marketing activities should be liberalized and credit flow be stepped up.
13. PRIs, SHGs and NGOs should be effectively involved in creation of awareness about post-harvest handling and creation of infrastructure in rural periodic markets.
14. Popularization of use of IT in agricultural marketing should be encouraged.
15. Efficiency of agro-processing should be increased by allowing competition through deregulation in some cases and encouraging investment in others.
16. Tax structure on agricultural commodities and processed products must be made uniform across states.

17. MSP policy should be continued and should be effectively implemented in all the areas. Policies such as levy on rice millers and sugar mills, monopsony procurement of raw cotton in Maharashtra and state advised prices of sugarcane should be phased out. A market intervention scheme should be put in place for those commodities, which are not covered by MSP policy.
18. Incentive framework for food grain producers and food management system built up over the years should be retained as an important instrument of food security policy. However, inefficiencies in the system should be removed.
19. Import tariff for commodities produced by resource poor farmers viz.; edible oils and pulses, should be maintained at reasonable levels for helping in reducing inter-regional disparities in development and for better utilization of available water resources.
20. The input subsidies should be retained as an essential component of policy of development and equity but should be targeted to needy and poor farmers.
21. Facilities for extension education and training of farmers in post-harvest value addition and quality specifications should be strengthened. Training and teaching aids in regional languages should be developed.
22. Quality testing laboratories for inputs as well as products should be established in rural areas.
23. Post- graduate degree and diploma courses in agribusiness management should be introduced in all the SAUs.
24. Public support to research in agricultural marketing should be improved at both the centre and state levels.
25. The gap as well as lag in availability of agricultural marketing information and statistics should be reduced by strengthening statistical cells at the centre as well as state level.

The other comprehensive review launched by the Government was the commissioning of a high-level committee on long-term grain policy by the Union Ministry of Consumer Affairs, Food and Public Distribution (Abhijit Sen). This committee submitted its report in July 2002.

The main recommendations of the High Level Committee on Long Term Grain Policy (GOI, 2002) are as follows:

1. (i) Food self-sufficiency should continue to be an indispensable component of India's national security.

(ii) The objectives of the present food security system cannot be ignored even in the future.

(ii) Ensuing reasonable and stable prices through MSP operations will remain an important element of the food security strategy even in future. Therefore, MSP system with open-ended purchases should continue, which is WTO compatible.

**2.** (i) Focus of food for welfare of unemployed, destitute and children should continue. The stocks for food should be used under employment schemes, Antodaya scheme under mid-day meal scheme.

(ii) A universal system of PDS should be introduced.

(iii) Additional cash subsidy be given to states for poor consumers or persons in backward regions.

(iv) The restrictions on eligibility for running a FPS should be relaxed

(v) PRIs and their women members should be actively involved in PDS management.

**3.** (i) CACP should be made empowered statutory body and statutory status be assigned to MSP.

(ii) MSP should be announced before sowing and enforced throughout the country.

(iii) FCI should continue to be the central nodal agency, but must operate effectively in non-traditional states for preventing distress sales in these areas.

(iv) FCI should withdraw from Punjab and Haryana where state agencies are capable to handle procurement.

(v) All procurement and disposal of coarse grains under MSP operations should be decentralized to states with full financial support from the centre.

(vi) All compulsory levy orders under ECA should be removed. However, mills should be involved in buying paddy under MSP operations and custom milling it for FCI.

(vii) FAQ standards should be strictly adhered to.

(viii) MSP policy should be supplemented by variable import and export tariff policies for effective price stabilization.

**4.** For encouraging private trade in food grain marketing

(i) ECA should only apply to situations of natural disasters. Orders under this Act should be reviewed.

(ii) An upper limit on taxes and statutory levies should be set.

- (iii) APMC Act should be amended to allow bulk buyers to buy outside market yards and to establish new regulated markets.
- (iv) The system of negotiable warehouse receipt should be simplified and expanded.
- (v) All investment for bulk handling of grains for exports should be reserved for the private sector.
- (vi) Investment should be made in rural roads and market infrastructure.

## **2.2. Agriculture Market Reforms in Assam:**

The increasing trend of agricultural production has re-defined the role of marketing system both at State and at National level. The new challenges owing to liberalization and globalization have also necessitated strengthening of the agricultural marketing system of all the States in the country. In a region like the North-East, markets are underdeveloped and hence the State Governments have a greater role in promoting market efficiency, growth and development of infrastructure for the success of agricultural market and to take corrective measures for controlling the monopoly of private traders in marketing of fruit crops. To a commercial producer of fruits and vegetable, marketing is problematic and complicated when road, transport, storage infrastructure etc. are far from satisfactory.

The economic reform measures in the country have opened up ample avenues for the private market forces, which is a key factor of achieving economic growth. The sectoral and regional growth depends on their capacity to trade domestically as well as externally. At present, Assam State Agriculture Marketing Board, North Eastern Regional Agricultural Marketing Corporation Ltd. (NERAMAC), STATFED, FCI, are the major State/Central Govt. market agencies involved in agricultural marketing besides some established private traders.

To improve the efficiency of the marketing system of the country and to encourage private sector involvement in agricultural marketing, a Model APMC Act was finalized in 2003 by the Government of India and circulated to all the States.

Accordingly, the Assam Agricultural Produce Market Act, 1972 had been amended in 2006 as a part of agricultural market reforms as per Model Act issued by the Govt. of India incorporating the provisions for (a) Private Marketing (b) Direct Marketing (c) Consumer – Farmers Market and (d) Contract Farming. The act also empowers Market Boards to levy cess

and relieves existing restrictions on movement, storage and transportation of agricultural produces.

## **2.3. Market Regulation in Assam**

### **2.3.1 Market Regulation before the Amendment of the Act**

The Assam Agricultural Produce Market Act, 1972 has been implemented in Assam with effect from 15-6-1977 with the objective of regulation of buying and selling of agricultural produces and to establish an efficient marketing system where the growers may obtain reasonable and competitive price for their produce. The Regulated Market Scheme was introduced in the State with the formation of State Agricultural Marketing Board and the Regulated Market Committees (known as APMCs in other States) at different places in the State. The purpose is to establish modern market yards where all the facilities like scientific go-downs, platforms for auction of commodities, storage facilities, traders shop, bank and post office, parking places, provision of drinking water etc. are provided through the Market Committees under the provisions of the Assam Agricultural Produce Market Act, 1972. The scheme has been implemented through the Market Committees under the supervision, control and guidance of the Assam State Agricultural Marketing Board. The Assam State Agricultural Marketing Board with its head quarter at Guwahati is a statutory and apex body established for exercising superintendence and control over the Market Committees, the agencies responsible for successful implementation of the scheme in the field.

The agricultural marketing system of Assam is to some extent different from other States due to deficit production as well as less market arrivals. Moreover, the total marketable surplus was also not found to be transacted through the designated markets, alone. For example, about 70% of the commercial crops like Jute, Mesta etc. out of almost 99% of marketable surplus, 40% of Paddy out of almost 40% of marketable surplus, 50% of Pulses etc. out of 60% of marketable surplus are being transacted either at farm gate or at trader's premises directly. Together with this, malpractices were quite rampant especially, in the methods of sale, weighing, delivery, payment etc. which resulted in wide differences between the producer's rupee and consumer's rupee. All these bottlenecks and constraints were the major reasons for non-receipt of better prices by the producers.

Under the circumstances, the aims and objects of the existing Act could not serve the interest of the producers as desired. This has subsequently led to the amendment of the Act in the year 2006.

### **2.3.2 Amended Assam Agricultural Produce Market Act, 1972**

Following provisions are inserted vide section 7 of the Assam Agricultural Produce Market Act (Amendment) Act, 2006 (Assam Act No. III of 2007) to encourage Private Marketing, Direct Marketing, Consumer –Farmers Market and Contract Farming in the State.

#### **(i) Sale of specified agricultural produce:**

5A (1) All specified agricultural produce shall ordinarily be sold in the principal market yard/sub-market yards, subject to the provisions of sub-section (2):

Provided that the specified agricultural produce may also be sold at private market yards and other places subject to the provisions of sections 5B, 5C and 5D.

Provided further that it shall not be necessary to bring agricultural produce covered under contract farming to the principal market yard/ sub-market yard/private market yard and it may be directly sold to contract farming sponsor from farmers' field.

(2) Such specified agricultural produce, as may be brought by the licensed/registered traders from outside the market area or in the market area in the course of commercial transaction or by way of transportation, may be brought or sold anywhere in the market area.

(3) The price of the specified agricultural produce, brought for sale into the principal market yard or sub-market yard, shall be settled by tender bid or open auction or in any other transparent system and no deduction shall be made from the agreed price on any account whatsoever from the seller.

Provided that the price of specified agricultural produce in the private market yards shall be settled in the manner as may be prescribed.

#### **(ii) Establishment of private market yards and direct purchase of agricultural produce from agriculturist:**

5B The Director may issue registration in the prescribed manner to purchase agricultural produce by establishing private market yard or direct from agriculturist, in one more market area for-

- (a) process of the specified agricultural produce.
- (b) trade of specified agricultural produce of particular specification:
- (c) export specified agricultural produce;

(d) grading, packaging and transaction in other way by value addition of specified agricultural produce

**(iii) Establishment of Consumer/Farmer Market (Direct Sale by the Producer)**

5C (1) Consumer /Farmer market may be established by developing infrastructure, by any person or group of persons of a body corporate other than the Market Committee in any market area, at such place, producer of agricultural produce himself may sell his produce directly to the consumer- provided that the consumer shall not purchase more than such quality of a commodity at a time in the consumers market as may be prescribed.

(2) Registration of establishment of consumer/farmer market shall be granted by the Director in such manner as may be prescribed.

**(iv) Grant/renewal of registration**

5D(1) Any person or a group of persons or a body corporate other than the Market Committee, who desire to purchase specified agricultural produce direct from the agriculturists or wish to establish a private market yard under section 5B or desire to establish consumer/farmer market in one or more than one market area under section 5C shall apply to the Director for grant or renewal of the registration , as the case may be, in the manner as may be prescribed.

(2) Along with every such application for registration or /renewal thereof, the prescribed fees shall be deposited.

(3) The Director shall grant the registration or a renewal thereof in the prescribed manner or may refuse the same on any one or more of the following grounds, to be recorded in writing, as the case may be -

- (i) if the Market Committee's dues are outstanding against the applicant, the registration shall not be granted/renewed;
- (ii) if the applicant is a minor;
- (iii) if the applicant has been declared defaulter under the Act and rules made thereunder;
- (iv) such other reasons as may be prescribed.

(4) While granting registration or a renewal thereof under the section, the Director shall specify that no amount shall be realized on any account by the owner of the market from the seller of agricultural produce.



(5) Any registration granted/renewal under this section shall be subject to provisions of this Act and the rules framed there under.

**(v) Power to cancel/suspend the registration**

5E(1) Subject to the provisions of sub-section (2) the Director may, for the reasons to be communicated in writing to the registration holder, suspend or cancel the registration, if-

- (a) the registration has been obtained through willful misrepresentation or fraud;
- (b) the holder of the registration or any one acting on his behalf commits a breach of any one or more of the conditions of registration;
- (c) the holder of the registration commits any act or abstains from carrying on his normal business in the market area with the intention of obstruction, suspending or stopping the marketing of specified agricultural produce in the principal market yard/ sub-market yard and in consequence thereof the marketing of any specified agricultural produce has been obstructed suspended or stopped.
- (d) the holder of the registration has become insolvent;
- (e) the holder of the registration incurs any other disqualifications as may be prescribed and
- (f) the holder of the registration is convicted of any offence under this Act.

5E(2) No registration shall be suspended or cancelled under this section without giving a reasonable opportunity to its holder to show cause against such suspension or cancellation.

**(vi) Contract Farming**

5F Contract Farming agreement shall be governed in the manner laid hereinafter provided-

- 1) Contract Farming Sponsor shall register himself with the Deputy Commissioner of the district where the contract-farming producer resides in such manner as may be prescribed.
- 2) The Contract Farming Sponsor shall also get the contract farming agreement recorded with the Deputy Commissioner of the district, in such manner as may be prescribed in this behalf. The contract farming agreement shall be in such form and containing such particulars and terms and conditions as may be prescribed. Notwithstanding anything contained in contract farming agreement, no title, right,

ownership or possession shall be transferred or alienated or will vest in the contract farming sponsor or his successor or his agent as a consequence arising out of the contract farming agreement.

- 3) Disputes arising out of the contract farming agreement may be settled by the Director. The Director shall resolve the dispute in a summary manner within thirty days after giving the parties a reasonable opportunity of being heard.

**(vii) Redressal of dispute**

5G Any dispute between the owners of private market yards, consumer/farmer market and the Market Committee shall be referred to the Director or his representative or any other officer authorized by the State Government in this regard. The dispute shall be resolved after giving both the parties a reasonable opportunity of being heard. Appeal against the decision may be preferred for disposal under section 5H in such manner as may be prescribed.

**(viii) Appeal**

5H Any aggrieved person, concerning any matter under section 5B, 5C, 5D and 5E or a contract farming sponsor or producer under section 5F against the decision of the Director, may prefer an appeal before the State Government in the prescribed manner whose decision thereon shall be final and shall not be called in question in any court of law.

**(ix) Market yards and Sub-market yards, Farmer/Consumer Market and Private Market:**

5I In every market area, there may be –

- (i) a principal market yard and one or more sub-market yards managed by the Market Committee;
- (ii) one or more than one private market yards managed by a person or a group of persons or a body corporate other than the Market Committee.
- (iii) one or more than one farmer/consumer markets managed by a person or a group of persons or a body corporate other than the Market Committee.

**(x) Declaration of Market yards**

6 (1) For each market area there shall be one principal market-yard and one or more sub-market yards as may be necessary.

- (2) The Board with the approval of the State Government may declare –

- (i) any enclosure, building or locality in any market area to be the principal market yard and other enclosures, building or localities in such market areas, to be one or more sub-market yard or yards for the area, and
- (ii) any area including all lands with the buildings and structures thereon within such distance of the principal or sub-market yard or yards, as the case may be as it thinks fit to be market proper; (Provided that the location of the principal market yard, sub-market yard or yards or any other lands, buildings or structures ancillary there to shall be at a close distance from the location where the trade and merchandise in all or any specified agricultural produce normally takes place. )

(3)The land requirement for establishing a structure and its specification shall be such as may be prescribed Explanation - For this sub-section the word structure shall include any office building of the Market Committee, staff quarter, rest house, go down, principal market yard, sub-market yard or yards, check-gate and its ancillary structures.

**(Source:** The Assam Agricultural Produce Market Act, 1972 (as amended up to 2006), Assam Agricultural Marketing Board, Guwahati, pp.27-33)

### **2.3.3 Assam’s State of Market Regulation after the Amendment of the Act:**

The Assam State Agricultural Marketing Board (ASAMB) has established 24 regulated market committees, 20 primary market yards, 204 sub-market yards, 848 rural primary markets and 369 wholesale markets in different Districts/ Sub-Divisions of the State. The regulated markets have been covered under AGMARKNET. The details of Agricultural Market Infrastructure in the State may be evident from the Table below.

**Table-2.1**

#### **Market Infrastructure and Processing Unit Developed**

<b>Particulars</b>	<b>Nos. of Units</b>
Regulated Market Committee	24
Principal Market Yard(PMY)	20
Sub-market Yard(SMY)	204
Wholesale Market	369

Rural Primary Market	848
Organic Market	1 no. is being established in Guwahati
Rural Godown	<ul style="list-style-type: none"> <li>• 66 nos.(Capacity-66,680 MT)</li> <li>• Rural Seed Storage Godown-13 nos.</li> </ul>
Cold Storage	<ul style="list-style-type: none"> <li>• 19 nos.(Total capacity:84,450 MT)</li> </ul>
Processing Unit	<ul style="list-style-type: none"> <li>• 3 Nos. Running &amp; 3 Nos. under construction</li> </ul>

**Source:** Economic Survey, Assam, 2009-10 P.43

Even though there are marketing facilities for assembling and selling of agricultural produces through drying, storing, parking in some PMY and SMY but shifting of markets from the existing traditional market to the regulated market site has not been effected fully. It is a matter of strange that in many places markets are running on either side of the National Highway or State Highway or private land in a conjusted manner, despite having market yard equipped with the requisite infrastructures in nearby plot. Here lies the role of lessee under Panchayati Raj Act. Hence, there should be a co-ordinated effort from all concerned departments for shifting of traditional unorganized market to the organized regulated market where infrastructural development have been made for creating an environment to get good return from the produce . With reforms in every sphere of economic activities , the concept of contract farming, private market yard, consumer/ farmer market are to be redefined leading to a changed scenario of agricultural marketing as well.

Public Private Partnership (PPP) is a new concept that has been implemented in the State after the amendment of APMC Act and tremendous result has been observed in this sector. Contract farming under PPP model is spreading in a few selected districts of the State in case of potato, zinger and commercial flowers. Self Help Group (SHG) are growing orchid and anthurium commercially under buy back arrangement with flower exporters. Amendment of APMC has already started showing positive result and an area of 1500 ha. with various horticultural crops covering more than 3000 farmers have been brought under contract farming with a very satisfactory result. The contract farming is also being extended to high value rice very satisfactory result. The contract farming is also being extended to high value rice cultivation.

Assam State Agricultural Marketing Board (ASAMB) has decided to develop the Darrangiri banana market as single commodity market by providing facilities such as banana

storage, cold rooms, auction yards, internal roads, rest house, Weigh Bridge, drinking water and toilet facilities etc. besides other functional infrastructure.

The ASAMB has proposed to establish a terminal market near Changsari of Kamrup district of Assam at an estimated cost of Rs.186 crores, which will act as one stop shop for all requirements of the farmers. In the proposed terminal market, facilities such as auction yards, godowns, traders shop, cold storage, cold rooms, railway track and platform, weighing equipments, grading and packaging units, bank, post office, police outpost, primary health centre and veterinary clinic, staff quarters and guest house, public communication facilities, parking, garbage disposal system will be made available. The project is under active consideration of the Government.

The agricultural marketing scenario of Assam and the North-Eastern region is different from other states of the country. The agricultural markets in the region are scattered and are yet to be organized in true sense of the term. In Assam, 'AGMARKNET' scheme covered only the market committee offices. Major players of agricultural marketing- i.e. real markets and the real growers at the grass-root level remained beyond the reach of this scheme. To make the 'AGMARKNET' scheme successful and to bring its expediency to the farmers of Assam, the Board has adopted a scheme 'Krishi Bipanan Tathya Setu', to linkup major (agricultural producing) areas of the State with local wholesale markets and the markets outside the State covered under 'AGMARKNET' scheme. The aim of the scheme is to bring the market-related information to the doorstep of the growers of Assam, which will give them an option of market selection for selling their produces at remunerative price.

The implementation of the amendments of APMC Act is still at an infant stage in Assam as compared to other advanced states of India. Assam is yet to reap the benefits of emerging markets, although, agricultural marketing reforms under the amended Act have been enforced recently. It is also observed that farmers of the state are yet to harvest the real benefits in terms of return per unit of agricultural produces.

Presently, the State Government has taken some special initiatives to improve the marketing of agriculture produces in the State. Some of the initiatives are as follows -

- Plan to set up one modern producer-consumer market at Guwahati.
- Plan to set up a modern organic market, which is on the verge of completion at the moment.

- Extension through e-channel: A project has been undertaken on pilot basis for setting up facilities on the pattern of e- Choupal in two districts where a private company is being engaged for dissemination of information electronically on weather conditions, farm management, risk management and pricing of various commodities in different markets.
- Encourage contract farming amongst producers of Sugarcane, Ginger, Potato and Flowers.
- Plan to set-up cool chain facilities in 11 markets in the current financial year at cost of Rs.5.0 crores.
- Initiatives have been taken to strengthen marketing infrastructure under Rashtriya Krishi Vikas Yojana (RKVY) and Assam Agricultural Competitiveness Project(AACP).
- Prices of major agricultural commodities are to be telecasted through Door-Darshan everyday.
- Construction of Mega Food Park at Tihu under Nalbari District (about 110 Km. from Guwahati) which will have facilities like cold chain, dry ware house, common facility centre, standard design factory for local entrepreneurs etc.
- Special focus area is contract farming of various horticultural products like Assam lemon, pineapple and passion fruits.
- Setting up of Agri-Export Zone on ginger to facilitate scientific collection/handling of ginger, formation of organized ginger grower societies.
- Central pack house under construction at Guwahati.

#### **2.4 Features of Traditional and Emerging Channels:**

In the light of the above background, an attempt has been made to discuss the features of the Traditional Marketing Channel (TMC) and Emerging Marketing Channel (EMC).

The features of regulated market is that it helps to eradicate malpractices prevailing in the trade in urban, semi-urban and rural markets and to establish an efficient marketing system, where the growers may obtain reasonable and competitive price and the traders receive a fair deal in trading.

On the other hand, malpractices are quite rampant in the traditional marketing channel especially in the method of sale, weighing, delivery, payment etc. and one can witness wide difference between the producer's rupee and consumer's price. The producers in TMC identify all these bottlenecks to be the major factors for non-receipt of better prices.

The regulated markets have opened up some new horizon to the existing infrastructure. These include visibly open process of price discovery; more accurate and reliable weighing; standardized market charges; payment of cash to farmers without undue deductions; dispute settlement mechanism; timing and sequencing of auctions; reduction in physical losses of the produce; and availability of several amenities in the market yards. Though market regulation programme has initially served the purpose well, in the emerging scenario, several questions relating to the functioning and even relevance are being raised.

In Assam, several problems associated with regulated markets have been identified since the implementation of market regulation. The marketing committees do not allow the traders to buy from the farmers outside the specified market yards or sub yards. This adds to avoidable cost of marketing. Despite expansion in the number of regulated markets, the area served per market yard is quite high in Assam. The farmers are therefore, required to travel long distances to reach a market place. With the expansion in the market arrivals, there is considerable congestion in several market yards. This leads to undue delays in the disposal of the farmers' produce resulting in long-waiting periods and frustration for the farmers. In several markets, malpractices like late payment to farmers are still prevalent and deduction of certain amount for cash or spot payment and non-issue of sale slips by traders have continued unabated. Market functionaries (like traders, commission agents and labourers) in some markets have organized themselves in strong associations and thus have created barriers to entry of new functionaries. Market fee, by definition, is the charge for the services provided to market functionaries. However, a considerable part of the market fee is not ploughed back. Mostly, the APMCs have emerged as some sort of government sponsored monopolies in supply of marketing services/facilities, with all drawbacks and inefficiency associated with a monopoly.

However, in case of emerging marketing channel, farmers can sell their produce directly to the food processing industries, private players, retailers and consumers. In the emerging marketing channel, involvements of market intermediaries are less in the marketing process. Contract marketing/farming ensures mutually agreed price and assured sale of the produce. Therefore, producer's share in consumer's rupee is higher in EMC.

## **2.5 Comparison between TMC and EMC**

The marketing system is defined to be traditional where a large number of intermediaries are involved and the share to the producer is comparatively lower. The role of these intermediaries in agricultural marketing is to consolidate the produce at the village markets

and reconsolidate again at least two or three times before it reaches to the final consumer. As a result, the supply chain in the traditional marketing system becomes long and is completely dominated by those traders who operate on high margins without much value addition.

The purpose of state regulation of agricultural markets was to protect farmers from the exploitation of intermediaries and traders and also to ensure better prices and timely payment for their produce. Regulated markets in Assam, however, have not attained much success even after introduction of the system way back in 1977. Lack of adequate infrastructure facilities, ignorance of farmers about these markets, lack of proper market information, lack of grading and storage facilities are some of the problems often associated with the regulated market system in the state. Another problem associated with the system is the tendency of these markets to acquire the status of restrictive and monopolistic markets, providing no help in direct and free marketing, organized retailing and smooth raw material supplies to agro industries. Exporters, processors and retail chain operators cannot procure directly from the farmers as the produce is required to be channelized through regulated markets and licensed traders. There is, in the process, an enormous increase in the cost of marketing and farmers end up by getting a low price for their produce. Monopolistic practices and modalities of the state-controlled markets have also prevented private investment in the agricultural marketing sector.

Now the scenario of agricultural marketing is changing gradually because of the changes made in the APMC act and the emerging marketing concepts like direct marketing, contract farming, corporate entry etc. have begun to be popular amongst the farming communities.

Direct marketing is an innovative concept of emerging marketing system, which involves marketing of produce by the farmer directly to the consumers/millers without any intermediaries. Direct marketing enables producers and other bulk buyers to economize on transportation cost and improve price realization. It also provides incentive to large-scale marketing companies and exporters to purchase directly from producing areas. Direct marketing by farmers to the consumers has been experimented in the country through *Apni Mandis* in Punjab and Haryana. At present, these markets are being run at the expense of the state exchequer, as a promotional measure, to encourage marketing by small and marginal producers without the involvement of the intermediaries. Direct marketing helps to generate the idea of market oriented production and increases profit of the producer. It helps in better marketing, minimizes marketing cost and encourages distribution efficiency. It promotes employment to the



producer and enhances the consumers' satisfaction. It provides better marketing techniques to producers and encourages direct contact between producers and consumers. It encourages the farmers for retail sale of their produce also.

Contract farming is another concept of emerging marketing system, where farmers grow selected crop under a 'buy-back' agreement with an agency (entrepreneur or trader or processor or manufacturer). In the wake of economic liberalization, it has gained momentum, as the national and multinational companies have started entering into contracts with farmers for marketing of agricultural produce. They also provide technical guidance, capital and input facility to contracted farmers. Contract marketing/farming ensures continuous supply of quality produce at mutually agreed price to contracting agencies, as well as ensures timely marketing of the produce. The contract farming is not prevalent in the marketing of mandarin orange.

It has already been established by different studies that contract farming is advantageous to the farmers due to its inherent advantages like assured price, ensuring fair return, proper production planning, assured market, technical support, post-harvest technology, freedom from the clutches of middlemen, credit facility for inputs and other cost of cultivations, crop insurance, exposure to new technology and the best practices.

\*\*\*\*\*

## **CHAPTER - III**

### **SAMPLING METHODOLOGY AND SOCIO-ECONOMIC PROFILE**

In this chapter, an attempt has been made to present the sampling methodology and brief profile of the study area and socio-economic profile of the sample households.

#### **3.1 Sample selection method for primary data**

As per the methodology received from the Coordinating Agency, the study was confined in the state of Assam and the selection of crops, districts, C.D. blocks, villages and farmers has been presented below:

##### **3.1.1 Selection of crops**

Two horticultural crops viz.- Orange as Fruit Crop (Crop-1) and Potato as Vegetable Crop (Crop-2) have been selected purposively for the study on the basis of the existence of the two marketing channels, viz.- Traditional Marketing Channel (TMC) and Emerging Marketing Channel (EMC).

##### **3.1.2 Selection of Districts:**

Two horticultural crops dominated districts were accordingly selected purposively viz.- Tinsukia district and Nagaon district of Assam for Orange and Potato, respectively.

##### **3.1.3 Selection of C.D. blocks, Villages and Farmers:**

For the crop-1, 2(two) Community Development (C.D.) Blocks viz.- Hapjan and Kakapathar of Tinsukia district and for crop-2, 2(two) Community Development (C.D.) Blocks viz.- Pakhimoria and Juria were selected in consultation with the District Agriculture Officers of both the districts based on the predominance of the crops under reference.

From each block, three villages were selected purposively [altogether 6(six) villages from each district]. Further, lists of farm household marketing their produce through TMC and EMC were prepared according to four farm size groups from those selected villages of each block. Again, 25 (twenty-five) farmers adopting TMC and another 25(twenty-five) farmers adopting EMC were selected randomly from the three villages of each block by following Ratio Proportionate Technique against 4(four) strata (viz.- Marginal, Small, Medium and Large). Finally, 50(fifty) samples from each of the CD Blocks were drawn resulting into a total sample farm households of 200 in the State.

The detail breaks down of sample size are shown in the following table.

**Table – 3.1**  
**Break downs of sample size**

Name of the Selected Districts	Name of the crop under study	Category of Marketing Channel	Names of the Selected C.D. Blocks	Total nos. of Crop Growers	Ratio Proportion	Farm Size wise no of Selected Sample Farmers					
						Mg	Sm	Md	Lg	Total	
Tinsukia	Crop-1 Orange	EMC	Hapjan	77	32.47	6	7	8	4	25	
			Kakapathar	61	40.98	4	5	10	6	25	
		<b>Total</b>			<b>138</b>	<b>-</b>	<b>10</b>	<b>12</b>	<b>18</b>	<b>10</b>	<b>50</b>
		TMC	Hapjan	76	32.89	9	8	6	2	25	
			Kakapathar	97	25.77	7	10	4	4	25	
		<b>Total</b>			<b>173</b>	<b>-</b>	<b>16</b>	<b>18</b>	<b>10</b>	<b>6</b>	<b>50</b>
Nagaon	Crop-2 Potato	EMC	Pakhimoria	68	36.76	4	11	8	2	25	
			Juria	62	40.32	6	9	8	2	25	
		<b>Total</b>			<b>130</b>	<b>-</b>	<b>10</b>	<b>20</b>	<b>16</b>	<b>4</b>	<b>50</b>
		TMC	Pakhimoria	90	27.78	7	10	7	1	25	
			Juria	97	25.77	8	9	5	3	25	
		<b>Total</b>			<b>187</b>	<b>-</b>	<b>15</b>	<b>19</b>	<b>12</b>	<b>4</b>	<b>50</b>

**N.B.:** Mg.-Marginal, Sm.-Small, Md.- Medium and Lg.-Large

### 3.1.4 Selection of Buyer, Retailer and Consumer:

For selection of buyer (pre-harvest contractor/commission agent, merchant wholesaler and wholesaler) and retailer for both the crops dealing in TMC, we have considered the main markets within the sample districts viz.- Tinsukia fruit market for orange and Nagaon ‘Bora Bazar’ for potato. From each market, 5 (five) buyers and 5 (five) retailers were chosen randomly and interviewed for the study.

But, in case of EMC for orange crop 5 (five) buyers (SHG/growers’ representative group) were selected and interviewed from the sample district of Tinsukia and for potato an NGO viz. Bengena-Ati Surovi Gram Vikash Samity in the contract farming system was the only buyer, interviewed from sample district of Nagaon for the study. It may be noted that no retailer was found for both the crops in EMC.

For TMC and EMC, two samples of 15 (fifteen) consumers each for orange and two samples of 15 (fifteen) consumers each for potato were also drawn randomly from both the sample districts.

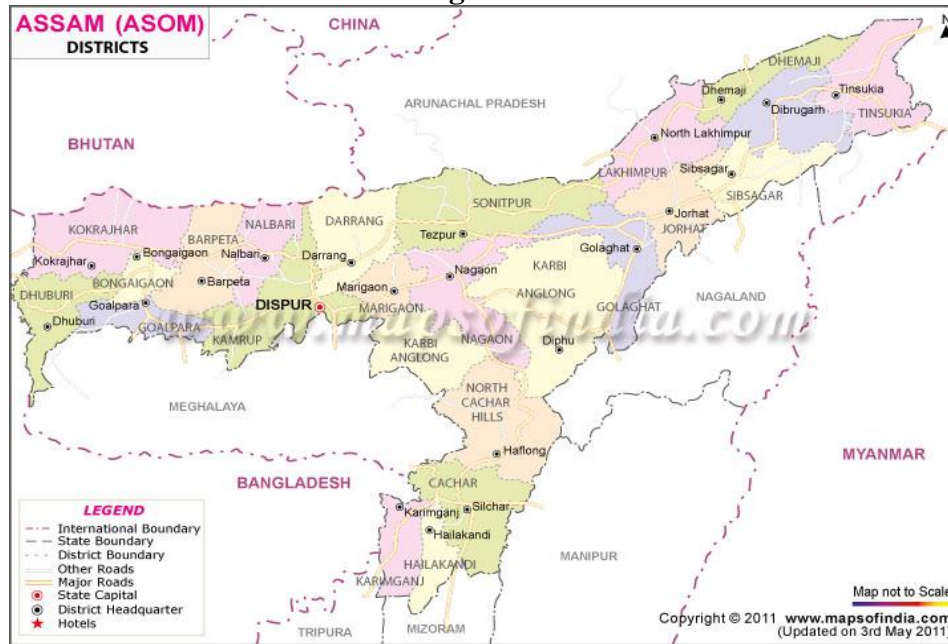
Five market committee members, three from Tinsukia and two from Nagaon were interviewed for the study.

The data has been collected through personal interview method using the well structured schedule & questionnaires designed specially for the study by the coordinators.

### 3.2 Brief Description of the Study Area

The study area Assam is popularly called as the land of the red river and blue hills and it is the gateway to the northeastern part of India. Assam is bordered in the North and East by the Kingdom of Bhutan and Arunachal Pradesh, respectively. Along the south lies Nagaland, Manipur and Mizoram. Meghalaya lies to her South-West, Bengal and Bangladesh to her West. Assam is lying between  $24^{\circ}08'$  to  $27^{\circ}09'$  N

**Fig. – 3.1**



latitude and  $89^{\circ}42'$  to  $96^{\circ}10'$  E longitudes. It is divided into three physiographic divisions viz.- the Brahmaputra Valley, the Barak Valley, and the Hill region. The state has 27 districts and out of these, 22 districts fall under the Brahmaputra Valley, 3 districts under the Barak Valley and districts under the Hill region. The Brahmaputra Valley covers 72 per cent, the Barak Valley covers 9 per cent and the Hill region accounts for 19 per cent of the total geographical area of 78,438 sq.km. in the State.

The economy of Assam continues to be predominantly agrarian as the mainstay of more than 70 per cent of the State's population is Agriculture. According to 2001 Census, 2.66 crores of the total population of the State depends on agriculture fully or partially. The contribution of the agriculture sector to the GSDP (at constant prices; 1999-2000) was pegged at 22.85 per cent in 2007-08(Quick estimate) after steady decline from 32.24 per cent in 1999-2000. However, this sector continues to support more than 75 per cent population of the state directly or indirectly providing employment to more than 53 per cent of the workforce.

For the present study, we have selected two Districts viz. - Tinsukia and Nagaon of Assam as mentioned above. Hapjan and Kakapathar of Tinsukia District and Khagarijan and Juria of Nagaon district are the four selected C.D. blocks for the study.

### 3.2.1 Tinsukia District

Tinsukia district is known for its tea gardens and natural resources. It is situated in between 27°23' to 27°48'N latitude and 93°22' to 95°38'E longitude. The district is bounded by Arunachal Pradesh in the east and by Dibrugarh district in the south west and at the north partially by the mighty Brahmaputra River which separate the district from Dhemaji district. Soils of the district are sandy to clayey and acidic

Fig. – 3.2



in nature. The climate is subtropical, warm and humid with an average annual rainfall of 2500 mm with average rainy days of 140 to 150 days per year. The average maximum temperature is about 39<sup>0</sup> C and minimum 9<sup>0</sup> C. The climate is excellent and nature has bestowed all its blessings in the form of deep forest, grand rivers, exquisitely beautiful landscape, diverse flora and fauna, lovely tea gardens and bio-diversity hot spots.

Agriculture is the predominant economic activity of the district engaging about 70% of the population directly or indirectly. Agriculture is characterized by mono -cropping pattern. Other major economic activities are tea plantation and orange orchards. The oil refinery and coal mines are other big industries in the district.

### 3.2.2 Nagaon District

The district of Nagaon is situated in the central Brahmaputra Valley of Assam and has a total geographical area of 3831 sq. km. which constitutes 4.88% of the total geographical area of the state of Assam. The district lies between  $25^{\circ}45'$  to  $26^{\circ}45'$  N Latitude and  $92^{\circ}33'$  to  $93^{\circ}20'$  E longitude. The district is bounded by Sonitpur district & the Brahmaputra river on the north, West Karbi-Anglong and North Cachar Hills in the south, East Karbi-Anglong and Golaghat districts in the East and by Morigaon district on the west. The climate of the district is characterised by hot and wet summer and dry and cool winter. Rainfall in the district varies quite significantly from place to place and is between 1200 mm to 2200 mm.

Fig. – 3.3



The economy of Nagaon district is agrarian. The district of undivided Nagaon (now Nagaon and Morigaon) is called the granary of Assam. The farmers in the district are enterprising and they raise commercial crops as well. Paddy, Sugarcane, Mustard, Jute, Potato and other vegetables are the major crops grown in the district.

### 3.2.3 Brief Profile of the Sample Districts

Some of the basic information for both the selected districts vis-a-vis Assam are presented in the Table - 3.2. Out of the total population of Assam, Tinsukia and Nagaon districts accommodate about 4.31 per cent and 8.69 per cent respectively. The literacy rate of Tinsukia district is almost equal with Assam state as a whole and is slightly higher than that of Nagaon district. The density of population in Nagaon district is almost double as compared to Tinsukia

while in case of Assam it is 340 persons per sq.km. according to the population census 2001. The population below poverty line in Assam is 191 persons per thousand while it is 142 in Tinsukia and 150 in Nagaon district.

**Table - 3.2**  
**Profile of the Sample Districts and Assam at a Glance**

Sl. No.	Items	Units	Tinsukia District	Nagaon District	Assam
<b>Population Statistics</b>					
1.	Total Population	Nos.	11,50,062	23,16,857	2,66,55,528
2.	Male	Nos.	6,01,099	11,92,286	1,37,77,037
3.	Female	Nos.	5,48,963	11,24,571	1,28,78,491
4.	S.C.	percentage	2.72	9.30	6.85
5.	S.T.	percentage	5.85	3.86	12.41
6.	Hindu	percentage	89.48	47.80	64.89
7.	Literacy Rate	percentage	63.28	61.73	63.25
8.	Density of Population	Nos.	303 (per Sq.Km.)	604 (per Sq.Km.)	340 (per Sq.Km.)
9.	Population below Poverty line	Nos.	142 (per '000)	150 (per '000)	191 (per '000)
10.	Growth rate	percentage	+19.52	+22.26	+18.92
11.	Sex-Ratio	No. of Female per 1000 male	913	944	923
<b>Agricultural Indicators</b>					
12.	Average farm Size	Ha.	NA	NA	1.11
13.	Irrigation Intensity	percentage	103.33	119.76	113.72
<b>Administrative breakup</b>					
9.	Towns	Nos.	10	10	125
10.	Sub-Divisions	Nos.	3	3	54
11.	C. D. Blocks	Nos.	7	18	219
12.	Zilla Parishad	Nos.	1	1	20
13.	Anchalik Panchayats	Nos.	7	20	189
14.	Gaon Panchayat	Nos.	86	239	2,202
15.	Villages	Nos.	1,107	1,375	25,124

**Sources:** Statistical Handbook of Assam, 2008

Both the sample districts possess equal numbers of Towns(10), Sub-divisions(3) and Zila Parishad(1). However, Nagaon district consists of higher numbers of C.D. blocks(18), Anchalik Panchayats(20), Gaon Panchayat(239), and villages(1375), as compared to Tinsukia district.

### 3.2.4 Operational Holdings

Farm size wise number and area of operational holdings of the sample districts and Assam are presented in Table – 3.3.

**Table - 3.3**  
**Farm size wise Number and Area of Operational Holdings**  
**of the selected Districts and Assam**

(as per 2000-01, Agricultural Census)

Farm Size Groups	Tinsukia District		Nagaon District		Assam	
	Number	Area (Ha.)	Number	Area (Ha.)	Number	Area (Ha.)
Marginal (0-1 hect)	57,417 (55.19)	32,870.52 (18.35)	1,01,824 (51.81)	32,596.65 (14.36)	16,99,107 (62.65)	6,62,781.52 (21.29)
Small (1-2 hect)	26,401 (25.38)	36,226.08 (20.23)	46,527 (23.67)	48,311.03 (21.29)	5,61,039 (20.69)	7,30,513.15 (23.46)
Medium (2-4 hect)	15,458 (14.86)	45,345.62 (25.32)	38,173 (19.42)	93,960.29 (41.40)	3,51,521 (12.96)	9,57,959.34 (30.77)
Large (4 hect & above)	4,756 (4.57)	64,659.31 (36.10)	10,008 (5.10)	52,076.27 (22.95)	1,00,470 (3.70)	7,62,323.52 (24.48)
<b>Total</b>	10,4032 (100.00)	1,79,101.53 (100.00)	1,96,532 (100.00)	2,26,944.24 (100.00)	27,12,137 (100.00)	31,13,577.53 (100.00)

**Note:** Figures in the parentheses indicate percentage to total

**Source:** Statistical Hand Book, Assam, 2008, Directorate of Economics and Statistics, Govt. of Assam, Guwahati.

### 3.2.5 Land Use Pattern

Land use pattern of the sample districts and Assam are presented in the table 3.4. Out of the total net area sown of Assam, Tinsukia and Nagaon districts occupy 3.62 and 8.54 per cent, respectively. The cropping intensity is recorded to be in the range of 142 to 150 per cent, as indicated in the table.

**Table- 3.4**  
**Land Use Pattern of Nagaon, Tinsukia and all Assam**

(Unit of Area is in 000' ha)						
Land Use Pattern :	Tinsukia District	% to geo. area	Nagaon District	% to geo. area	Assam	% to geo. area
Geographical area	379	-	411	-	7,850	-
Non-Agricultural area	74.29	19.60	31.51	7.67	1,065	13.57
Net Sown area	99.67	26.30	234.97	57.17	2,752	35.06
Area sown more than once	42.77	11.28	116.74	28.40	1,143	14.56
Land Under Misc.tree/Groves	20.62	5.44	9.55	2.32	209	2.66
Barren & Uncultivated land	36.81	9.71	22.53	5.48	1,447	18.43
Permanent Pasture & Grazing land	3.56	0.94	5.97	1.45	160	2.04
Current Fallow	6.76	1.78	3.06	0.74	126	1.61
Fallow Land other than Current Fallow	1.16	0.31	1.99	0.48	59	0.75
Culturable waste land	1.59	0.42	3.52	0.86	77	0.98
Forest Area	134.55	35.50	9.79	2.38	1,954	24.89



Total Cropped Area	142.44	37.58	351.71	85.57	3,896	49.63
Cropping Intensity	143	-	150	-	142	-

Sources: Statistical Handbook of Assam, 2008

### 3.2.6 Irrigation

Season wise irrigated area in the sample districts and Assam are presented in the Table - 3.5.

**Table-3.5**  
Season wise Irrigated Area in the Sample Districts and Assam

(Unit of Area is in Hectare)			
Districts	Kharif	Rabi & Pre-kharif	Total
Tinsukia	1,085.00 (96.78)	36.10 (3.22)	1,121.10 (100.00)
Nagaon	33,011.00 (83.50)	6,522.90 (16.50)	39,533.90 (100.00)
All Assam	1,47,769.00 (87.51)	21,084.60 (12.49)	1,68,853.60 (100.00)

Note: Figures in the parentheses indicate percentage to total

Source: Statistical Handbook of Assam, 2010

### 3.2.7 Cropping Pattern

Cropping pattern of the sample districts and Assam as a whole are presented in the Table - 3.6. Rice is the main crop grown in all the districts of Assam. Rice covers 42.43, 54.76 and 84.45 per cent areas of the gross cropped areas of Tinsukia, Nagaon and Assam respectively.

**Table - 3.6**  
Cropping Pattern of the Sample Districts and Assam as a whole

District & Crop Area Crops ↓ →	Tinsukia District		Nagaon District		Assam	
	Area (in Ha.)	% to GCA	Area (in Ha.)	% to GCA	Area (in Ha.)	% to GCA
Autumn Rice	4,890	3.43	19,065	5.42	354,000	9.09
Winter Rice	55,537	38.99	130,754	37.18	1,647,000	42.27
Summer Rice	10	0.01	42,793	12.17	323,000	8.29
<b>Total Rice</b>	<b>60,437</b>	<b>42.43</b>	<b>192,612</b>	<b>54.76</b>	<b>2,324,000</b>	<b>59.65</b>
Wheat	280	0.20	5,732	1.63	56,000	1.44
Maize	967	0.68	410	0.12	18,000	0.46
<b>Total Cereals</b>	<b>61,684</b>	<b>43.31</b>	<b>259,178</b>	<b>73.69</b>	<b>2,400,000</b>	<b>61.60</b>
Rape & Mustard	9,135	6.41	16,172	4.60	235,000	6.03
Total Pulses	3,824	2.68	9,238	2.63	105,000	2.70
Total Oilseeds	21,300	14.95	21,052	5.99	255,000	6.55
Cotton	2	0.00	42	0.01	1,359	0.03
Sugar cane*(cane nos.)	302	0.21	8,044	2.29	26,000	0.67
Jute** (bales of 180kg)	17	0.01	9,506	2.70	60,000	1.54
Mesta	-	-	70	0.02	5,253	0.13

Potato	2,642	1.85	4,977	1.42	75,000	1.93
Kharif Vegetables	3,216	2.26	3,287	0.93	75,000	1.93
Rabi Vegetables	5,999	4.21	7,891	2.24	1,670	0.04
Orange	1,325	0.93	63	0.02	8,198	0.21

Source: Directorate of Agriculture, Govt. of Assam, 2007-08

### 3.2.8 Occupational Distribution

The Table - 3.7 represents occupational distribution of the sample districts and Assam according to 2001 census. The percentage of main workers is more than 75 in both the sample districts, of which 27.62 and 11.23 per cent are female in the Tinsukia and Nagaon district, respectively.

**Table - 3.7**  
**Occupational Distribution of Sample Districts and Assam according to 2001 Census**

District → Class of Workers ↓	Unit is in Numbers								
	Tinsukia			Nagaon			Assam		
	P	M	F	P	M	F	P	M	F
Main Workers	349847	253209	96638	566195	502619	63576	7114097	5849032	1265065
% to total Workers	75.02	83.17	59.69	77.81	85.68	45.09	74.58	85.13	47.42
Marginal workers	116504	51250	65254	161446	84012	77434	2424494	1021928	1402566
% to total Workers	24.98	16.83	40.31	22.19	14.32	54.91	25.42	14.87	52.58
<b>Total Workers</b>	<b>466351</b>	<b>304459</b>	<b>161892</b>	<b>727641</b>	<b>586631</b>	<b>141010</b>	<b>9538591</b>	<b>6870960</b>	<b>2667631</b>
% to total Population	40.55	50.65	29.49	31.44	49.26	12.55	35.78	49.87	20.71
Cultivators	145476	84061	61415	279394	231238	48156	3730773	2634068	1096705
% to total Workers	31.19	27.61	37.94	38.40	39.42	34.15	39.11	38.34	41.11
Agricultural Labourers	28806	15088	13718	144699	114307	30392	1263532	832508	431024
% to total Workers	6.18	4.96	8.47	19.89	19.49	21.55	13.25	12.12	16.16
Household industries workers	8627	4144	4483	24424	10858	13566	344912	133902	211010
% to total Workers	1.85	1.36	2.77	3.36	1.85	9.62	3.62	1.95	7.91
Other Workers	283442	201166	82276	279124	230228	48896	4199374	3270482	928892
% to total Workers	60.78	66.07	50.82	38.36	39.25	34.68	44.03	47.60	34.82
Non Workers	683711	296640	387071	1586988	604319	982669	17116937	6906077	10210860
% to total Population	59.45	49.35	70.51	68.56	50.74	87.45	64.22	50.13	79.29
<b>Total Population</b>	<b>1150062</b>	<b>601099</b>	<b>548963</b>	<b>2314629</b>	<b>1190950</b>	<b>1123679</b>	<b>26655528</b>	<b>13777037</b>	<b>12878491</b>
% to total Population	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: P- stands for person, M- stands for male and F-stands for female.

Source: Statistical Hand Book, Assam, 2010, Directorate of Economics and Statistics, Govt. of Assam, Guwahati

### 3.2.9 Infrastructure

The infrastructures of the sample districts can be seen from the Tables 3.8, 3.9 and 3.10.

**Table - 3.8**  
**Length of PWD Roads by Type in Sample Districts of Assam in 2009-10**  
**with Road Density excluding NH**

(unit is in Kms.)					
District	Black Topped	Earthen/ Gravelled	Total	Road Density	
				Per lakh of Population	Per '00'sq. km. of geographical area
Tinsukia	475	767	1,242	108.00	32.77
Nagaon	966	1,440	2,406	104.00	60.56
Assam	13,163	24,338	37,501	140.69	47.81

Source: Statistical Hand Book, Assam, 2010, Directorate of Economics and Statistics, Govt. of Assam, Guwahati

Table 3.8 indicates length of PWD roads by type in sample districts of Assam during 2008-09. Out of the total PWD roads in Assam, Tinsukia district occupies 3.05 per cent and Nagaon district occupies 6.63 per cent.

**Table - 3.9**  
**Length of roads of sample district according to different classes**  
**under PWD in Assam, 2009-10**

Unit is in Kms.					
District	State Highway	Major District Road	Rural Road	Urban Road	Total
Tinsukia	63	171	957	51	1,242
Nagaon	297	327	1729	53	2,406
Assam	3,134	4,413	28,753	1,202	37,501

Source: Statistical Hand Book, Assam, 2010, Directorate of Economics and Statistics, Govt. of Assam, Guwahati.

Table 3.9 shows length of PWD roads according to different classes in sample districts of Assam during 2008-09.

**Table- 3.10**  
**Number of Village Electrified in the Sample Districts and all Assam**

Districts	Number of Village Electrified	Percentage of Villages Electrified
Tinsukia	725	65.49
Nagaon	1,014	73.75
All Assam	14,516	57.78

Source: Statistical Handbook of Assam, 2008

Number of village electrified in the sample districts and all Assam has been presented in Table 3.10. The percentage of village electrified in Nagaon (73.75) is higher than Tinsukia(65.49) and the State as a whole(57.78).

### 3.2.10 District Income

The sector wise Gross district domestic product and per capita net districts domestic product are presented in the tables 3.11 and 3.12 at current prices and constant prices (1999-2000) , respectively.

**Table – 3.11**  
**Gross District Domestic Product of sample districts and GSDP of Assam**  
**at factor cost, 2007-08 (Provisional)**  
**At current prices**

District	GDDP (Amount in lakh)				Per capita NDDP (in Rs.)
	Primary	Secondary	Tertiary	Total	
<b>Tinsukia</b>	2,13,948	74,479	1,85,514	4,73,941	38,400
<b>Nagaon</b>	1,40,024	76,963	1,66,500	3,83,487	15,435
<b>Assam</b>	24,83,796	12,54,181	33,06,018	70,43,995	24,056

**Source:** Statistical Hand Book, Assam, 2008, Directorate of Economics and Statistics, Govt. of Assam, Guwahati

From the table 3.11, it is seen that the percentage share of the district income to total State income at current prices are 6.73 per cent and 5.44 per cent for Tinsukia district and Nagaon district, respectively.

**Table – 3.12**  
**Gross District Domestic Product of sample districts and GSDP of Assam**  
**at factor cost, Assam, 2007-08(Provisional)**  
**At constant (1999-2000) prices**

District	GDDP (Amount in lakh Rs.)				Per capita NDDP (in Rs.)
	Primary	Secondary	Tertiary	Total	
<b>Tinsukia</b>	1,08,918	49,958	1,57,837	3,16,713	25,661
<b>Nagaon</b>	94,340	52,045	1,40,927	2,87,312	11,564
<b>Assam</b>	15,12,581	8,45,884	27,78,746	51,37,211	17,544

**Source:** Statistical Hand Book, Assam, 2008, Directorate of Economics and Statistics, Govt. of Assam, Guwahati

From the table 3.12, it is seen that the percentage share of the districts income to total State income at constant prices are 6.16 per cent and 5.59 per cent for Tinsukia district and Nagaon district, respectively.

It is also seen from the tables 3.11 and 3.12 that the per capita NDDP of Tinsukia district is more than that of Nagaon and Assam in both current and constant prices.

### 3.3 Socio Economic Profile of the Sample Farmers

Some of the socio-economic indicators of the sample households are highlighted under this section.

### 3.3.1 Religion and Caste

The religion and caste of the sample farmers by farm size groups for both the crops have been presented in the Tables 3.13 and 3.14.

**Table-3.13**  
**Religion and Caste of the sample Farmers growing Orange**

Farm Size with Sample Size Religion and Caste	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	16	10	18	12	10	18	6	10
% Hindu Households	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% Muslim Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Christian Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Other Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% SC Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% ST Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% OBC Households	100.00	92.00	100.00	100.00	100.00	91.67	100.00	88.89	100.00	90.00
% General Household	0.00	8.00	0.00	0.00	0.00	8.33	0.00	11.11	0.00	10.00

From the Table 3.13, it is seen that the religion of all the sample households growing orange and practicing TMC and EMC are Hinduism. On an average 92.00 per cent of the farmers adopting EMC belong to OBC category.

**Table-3.14**  
**Religion and Caste of the sample Farmers growing Potato**

Farm Size with Sample Size Religion and Caste	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	15	10	19	20	12	16	4	4
% Hindu Households	10.00	14.00	13.33	0.00	10.53	20.00	8.33	18.75	0.00	0.00
% Muslim Households	90.00	86.00	86.67	100.00	89.47	80.00	91.67	81.25	100.00	100.00
% Christian Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Other Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% SC Households	4.00	8.00	13.33	0.00	0.00	20.00	0.00	0.00	0.00	0.00
% ST Households	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% OBC Households	6.00	6.00	0.00	0.00	10.53	0.00	8.33	18.75	0.00	0.00
% General Household	90.00	86.00	86.67	100.00	89.47	80.00	91.67	81.25	100.00	100.00

On the other hand, 90.00 percent and 86.00 per cent of the sample households growing potato (Table-3.14), are Muslim in case of TMC and EMC respectively and they are treated as general (minority) category. It is also observed from the table that all selected large farmers are Muslim for both the samples.

### 3.3.2 Economic Conditions

The economic conditions of the sample farmers by farm size groups for both the crops are presented in the Tables 3.15 and 3.16.

**Table-3.15**  
**Economic Condition of the sample Farmers- Orange**

Farm Size with Sample Size Household Characteristics	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	16	10	18	12	10	18	6	10
% Households owning a Ration Card	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% APL Households	68.00	78.00	18.75	20.00	61.11	75.00	100.00	100.00	100.00	100.00
% BPL Households	32.00	22.00	81.25	80.00	38.89	25.00	0.00	0.00	0.00	0.00
% Pucca and Semi-Pucca Houses	85.00	38.00	50.00	50.00	62.50	58.33	100.00	61.11	100.00	90.00
% Kuttcha Households	15.00	62.00	50.00	50.00	37.50	41.67	0.00	38.89	0.00	10.00
% Owing Telephone Landline	6.00	6.00	0.00	0.00	0.00	0.00	10.00	5.56	33.33	20.00
% Household Owning at least one Mobile Phone	92.00	92.00	50.00	70.00	72.22	91.67	100.00	100.00	100.00	100.00
% Household Owning a Computer	6.00	10.00	0.00	0.00	5.56	8.33	10.00	5.56	6.25	30.00
% Household having a Internet Connection at home	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

From the Table 3.15, it is seen that all the sample households own ration cards and 32.00 percent of TMC and 22.00 per cent of EMC households are BPL card holders. The BPL card holders are mainly concentrated in the marginal farm size group.

The percentages of pucca and semi-pucca houses are found to be 85.00 and 38.00 for TMC and EMC, respectively. Household owning telephone landline and mobile phone are found to be 6.00 per cent and 92.00 per cent each respectively for both the samples. 6.00 per cent of the households with TMC and 10.00 per cent of households adopting EMC have computer in their houses.

From the Table 3.16, it is observed that all the sample households have ration cards and 34.00 per cent of TMC and 36.00 per cent of EMC households are BPL cardholders. The BPL cardholders are mainly concentrated in the marginal farm size group.

**Table-3.16**  
**Economic Conditions of the sample Farmers- Potato**

Farm Size with Sample Size Household Characteristics	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	15	10	19	20	12	16	4	4
% Households owning a Ration Card	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% APL Households	66.00	64.00	13.33	0.00	75.00	71.43	100.00	100.00	100.00	100.00
% BPL Households	34.00	36.00	86.67	100.00	25.00	28.57	0.00	0.00	0.00	0.00
% Pucca and Semi-Pucca Houses	74.00	80.00	40.00	40.00	78.95	80.00	100.00	87.50	100.00	100.00
% Kuttcha Households	26.00	20.00	60.00	60.00	21.05	20.00	0.00	12.50	0.00	0.00
% Owing Telephone Landline	0.00	10.00	0.00	0.00	0.00	0.00	0.00	18.75	0.00	50.00







% Owning Bicycle	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% Owning Motorcycle	28.00	30.00	12.50	10.00	22.22	16.67	50.00	38.89	66.67	50.00
% Owning four wheeler	10.00	12.00	0.00	0.00	5.56	0.00	10.00	16.67	50.00	30.00
% Owning Tiller	20.00	16.00	0.00	0.00	5.56	8.33	50.00	11.11	66.67	50.00
% Owning Pump set	26.00	30.00	0.00	0.00	16.67	16.67	50.00	44.44	83.33	50.00

From the table 3.19 it is seen that, only 6.00 and 4.00 per cent households have Bullock cart in the samples of TMC and EMC, respectively. Of the EMC households 4.00 percent have tractor, 34.00 percent have trolley, 100.00 have bicycle, 30.00 percent have motorcycle, 12.00 per cent have four wheelers, 16.00 percent have power tiller and 30.00 percent have pump set. There are the case of TMC sample also.

Table-3.20

**Transport and Farm Machinery Assets of the Sample Farmers- Potato**

Farm Size with Sample Size Transport and Farm Machinery Assets	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	15	10	19	20	12	16	4	4
% Owning Bullock Cart	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	10.00	0.00
% Owning Tractor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
% Owning Trolley	60.00	60.00	26.67	60.00	57.89	60.00	91.67	56.25	100.00	75.00
% Owning Harvester	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
% Owning Bicycle	86.00	92.00	60.00	80.00	97.74	95.00	100.00	93.75	100.00	100.00
% Owning Motorcycle	34.00	24.00	6.67	0.00	31.58	20.00	50.00	37.50	100.00	50.00
% Owning four wheeler	6.00	8.00	0.00	0.00	0.00	0.00	8.33	12.50	50.00	50.00
% Owning Tiller	24.00	26.00	0.00	0.00	15.79	15.00	41.67	37.50	100.00	100.00
% Owning Pumpset	84.00	76.00	53.33	20.00	94.74	80.00	100.00	100.00	100.00	100.00

There is no household found to own bullock and 60.00 per cent of the household are found to have trolley for both the samples. Only 6.00 and 8.00 per cent household are there in TMC and EMC respectively who have four wheelers. Nearly 25 per cent of the large farmers under EMC have harvesters on their own. Besides, cent per cent large farm households have bicycles, power tillers and pump set.

### 3.3.5 Land Holding Pattern

The land holding patterns of the sample farmers by farm size groups for both the crops have been presented in the tables 3.21 and 3.22

Table-3.21

**Land Holding Pattern of the Sample Farmers- Orange**

Land Holding Particulars	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	16	10	18	12	10	18	6	10
% Marginal Farmers	32.00	20.00	-	-	-	-	-	-	-	-
% Small Farmers	36.00	24.00	-	-	-	-	-	-	-	-
% Medium Farmers	20.00	36.00	-	-	-	-	-	-	-	-
% Large Farmers	12.00	20.00	-	-	-	-	-	-	-	-
Minimum Size of the Farm (in ha.)	0.67	0.67	0.67	0.67	1.14	1.20	2.01	2.01	4.02	4.28
Maximum Size of the Farm (in ha.)	5.62	7.50	0.99	0.94	1.94	1.87	3.61	3.75	5.62	7.50



ha., respectively for TMC and EMC. The median sizes of the farm are calculated at 1.99 ha. for TMC and 2.10 ha. for EMC. The percentages of own land are 98.09 and 98.89, respectively for TMC and EMC. There is no dry land farmer in the study area and the 100.00 per cent farmers grow their crop under irrigated conditions (source: ground water).

### 3.3.6 Cropping Pattern

The Cropping patterns of the sample farmers by farm size groups for both the crops are presented in the tables 3.23 and 3.24

**Table-3.23**  
**Cropping Pattern of the Sample Orange Growers**

(Area in Ha.)

Crops	Farm Size with Sample size		Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	16	10	18	12	10	18	6	10		
<b>Kharif</b>												
Paddy	69.07	97.38	7.13	4.50	20.44	14.26	21.20	38.42	20.30	40.20		
Jute	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Vegetables	0.59	0.85	0.13	0.13	0.20	0.26	0.13	0.26	0.13	0.20		
<b>Rabi</b>												
Potato	1.96	2.29	0.40	0.39	0.35	0.45	0.46	0.60	0.75	0.85		
Muatarad	2.23	3.43	0.00	0.00	1.02	0.90	0.54	1.33	0.67	1.20		
Pulses	0.39	1.17	0.00	0.13	0.26	0.20	0.13	0.46	0.00	0.38		
Vegetables	0.73	5.50	0.10	0.13	0.15	0.59	0.35	2.73	0.13	2.05		
<b>Summer</b>												
Boro Pady	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
<b>Plantation Crops</b>												
Tea	19.81	21.16	3.88	2.68	7.00	4.02	4.62	6.29	5.09	8.17		
<b>Horticultural Crops</b>												
Orange	23.43	24.22	5.29	2.74	7.16	4.08	5.49	7.43	5.49	9.97		
Others (Banana, Assam lemon, Arecanut etc.)	2.48	1.75	0.56	0.16	0.82	0.28	0.62	0.68	0.48	0.63		
<b>GCA</b>	<b>121.47</b>	<b>157.75</b>	<b>17.49</b>	<b>10.86</b>	<b>37.40</b>	<b>25.04</b>	<b>33.54</b>	<b>58.20</b>	<b>33.04</b>	<b>63.65</b>		
<b>NCA</b>	<b>100.00</b>	<b>132.60</b>	<b>13.76</b>	<b>8.50</b>	<b>29.61</b>	<b>19.41</b>	<b>28.25</b>	<b>49.26</b>	<b>28.38</b>	<b>55.42</b>		
<b>Cropping Intensity (%)</b>	<b>121.47</b>	<b>118.97</b>	<b>127.11</b>	<b>127.76</b>	<b>126.31</b>	<b>129.01</b>	<b>118.73</b>	<b>118.15</b>	<b>116.42</b>	<b>114.85</b>		

The Net Cropped Areas (NCA) are found to be 100.00 ha and 132.60 ha. and the gross cropped areas (GCA) are calculated to be 121.47 ha. and 157.75 ha., respectively for TMC and EMC samples of orange. Paddy (*Kharif*) is the major crop, which occupies 69.07 ha. (56.86%) and 97.38 ha. (61.73%) of the GCA, respectively of the TMC and EMC sample households. It is also seen that, the areas under orange are only 19.29 per cent and 15.35 per cent of GCA for TMC and EMC respectively. The overall cropping intensities are estimated at 121.47% and 118.97% respectively for TMC and EMC samples.

In case of potato sample households (Table-3.24), the GCA is almost double to the NCA areas in both the samples. Paddy is the major crop grown by the sample farmers. It covers 71.52 per cent of GCA (out of which 55.69 per cent area is under Boro paddy) for TMC and 67.76 per cent of GCA (out of which 65.28 per cent area is under Boro paddy) for EMC respectively. The



From the Table 3.26, it is seen that 100.00 per cent farmers irrespective of adopting TMC & EMC are using pump sets. Further, 60.00 and 100.00 per cent are using tractor and 100.00 and 94.00 per cent are using trolley in case of TMC and EMC samples respectively. 72.00 per cent of the EMC farmers have their own storage.

**Table-3.26**  
**Farming Methods Used by the Sample Potato Farmers in all Crops Area**

Farm Size with Sample size Farming Methods	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	15	10	19	20	12	16	4	4
% Using Pump sets	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% Using Sprinkler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Using Drip	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Using Tractors	60.00	100.00	31.25	100.00	63.16	100.00	100.00	100.00	100.00	100.00
% Using Trolley	100.00	94.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00	100.00
% Using Bullock Carts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% having own Storage	0.00	72.00	0.00	40.00	0.00	60.00	0.00	100.00	0.00	100.00
% hiring Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Processing the produce on the Farm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.4 Importance of the Crops under Study

#### 3.4.1 Orange

Orange is a seasonal horticultural fruit crop. Mandarin is a group name for a class of oranges with thin, loose peel. These are treated as members of a distinct species, *Citrus reticulata* Blanco. The name "tangerine" could be applied as an alternate name to the whole group, but in the trade, it is usually confined to the types with red-orange skin. Mandarins include a diverse group of citrus fruits that are characterized by bright coloured peel and pulp, excellent flavor, easy-to-peel rind and segments that separate easily. It is usually consumed in raw form or in fruit salads as well as juice. The fruit consists of three layers. 1) The outer yellow/orange peel is with oil glands which exude the essential oils, producing the typical orange odor. 2) The whitish thread like mesocarp and 3) The endocarp consisting of 8 - 10 segments filled with juice sacs (vesicles).

#### **Box-1: Origin of Mandarin Fruits**

The exact location of origin of Mandarin fruits is not clearly identified. It is believed that Mandarins is a native of southeastern Asia and the Philippines. The spread of Mandarins from Asia to Europe was slow. First, it was taken to North Africa and then probably by the fall of the

Roman Empire; it entered the South of Europe, where it flourished in the middle ages. It is also believed that Mandarins were brought to America by the Spaniards (Columbus took seeds of citrus fruits with him in his second trip) and then by the Portuguese in their exploration trips of the New World, around 1500 AD. In Asia, it is most abundantly grown in Japan, Southern China and India. Mandarin is very important fruit crop, second only to banana.

### 3.4.1.1 Importance of Orange in Meeting the Food and Nutritional Needs

Orange is rich in vitamin C, A, B and phosphorus. Orange is consumed fresh or in the form of juice, jam, squash and syrup. It is the main source of peel oil, citric acid and cosmetics, which have international market value.

**Table - 3.27**  
**Chemical Composition of Mandarin**

Sl. No.	Constituents	Content (per 100 gms of edible portion)
1	Moisture	82.6-90.2 gm
2	Protein	0.61-0.215 gm
3	Fat	0.05-0.32 gm
4	Fibre	0.3-0.7 gm
5	Ash	0.29-0.54 gm
6	Calcium	25.0-46.8 mg
7	Phosphorus	11.7-23.4 mg
8	Iron	0.17-0.62 mg
9	Carotene	0.013-0.175 mg
10	Thiamine	0.048-0.128 mg
11	Riboflavin	0.014-0.041 mg
12	Niacin	0.199-0.38 mg
13	Ascorbic Acid	13.3-54.4 mg

**Source:** Morton, J. 1987. Mandarin, Fruits of warm climates. Julia F. Morton, Miami, FL.

almost same numbers of households have same type of transport and farm machinery assets in The chemical composition of the Mandarin is shown in the Table 3.27. Mandarins are rich in Ascorbic acid (13 – 54 mg per 100 g of edible portion) and Calcium (25 – 46 mg per 100 g of edible portion). They are a great source of Vitamin C. One orange actually has all the Vitamin C that one needs for the day. The water content in the fruit is nearly 80 to 90 per cent of edible portion.

### **Box-2: Citrus Production in India**

Citrus industry in India is the third largest fruit industry of the country after mango and banana. India ranks ninth among top orange producing countries contributing 3% to the world's total orange production. Only 1.72% of the country's production is exported.

#### **3.4.1.2 Orange Cultivation in Tinsukia District**

In Assam, Tinsukia, NC Hills, Karbi-Anglong, Kamrup, Goulpara, Dhemaji and Jorhat are the growing and potential belts of Orange (Khasi Mandarin).

Orange is grown predominantly in all the blocks of Tinsukia district. The prime growers are the people of "Moran" community of this district and the variety produced here is called "Khasi Mandarin" (*Citrus reticulata* Blanco) locally called as "Humthira", "Kamala", "Ronga Tenga" etc.. Once the trees are matured, it gives fruits for 15-20 years. The flowering season is July-August and harvesting season (when fruits are ready for consumption) is November to January. The variety produced here is with loose jacket but bigger in size, more juicy as well as tasty.

The agro-climatic condition of the district is very much suited for cultivation of orange. Tinsukia district is in fact the largest producer of orange both in terms of area and production in Assam. The area under this crop in the district is 1,455 hectares including new plantations and the production is 23,300 M.T. with a productivity of 16,013 Kg. per hectares. The major pockets of orange cultivation in the district are Kakapathar, Hapjan, Doomdooma, Phillobari, Ketetong, Margherita and Talap.

The average area of an orange orchard has been found to be about 4 (four) bighas though the area of individual orchards ranges from 2 bighas to 120 bighas. During last few years due to poor health of orange orchards resulting from use of improper planting material as well as poor management practices particularly, because of a complex problem called "Citrus Decline" had tempted the orange growers towards tea plantation i.e. another profitable venture on the same kind of land and agro-climatic condition. But recently again there has been a trend amongst the orange growers to go back to orange cultivation due to more labour intensive nature of tea and associated technical problems. Of course, because of the thrust given by the Department Agriculture, Govt. of Assam, with technical support from Citrus Research Station, A.A.U., Tinsukia through rejuvenation programmes and area expansion programmes under Technology

Mission for Integrated Development of Horticulture, the area under “Humthira” has increased by 20% in the district.

Most of the small tea growers used to practice intercropping tea with orange (*Khasi Mandarin*) which has resulted in increased production of orange thereby benefitted the farmers economically. Generally, November to January is the harvesting season for orange and out of the rest 9 months of a year, the farmers can pluck tea leaves from their small tea gardens at least for 7 months from April to October. So, from the economic point of view this ‘Orange cum Tea’ cultivation seems to be very popular and profitable venture amongst the farmers of the orange growing belts of the Tinsukia district of Assam.

The Table - 3.28 shows the trend of area, production and productivity of Orange in Assam and Tinsukia District for last few years. From the table it is seen that the area under orange is increasing in the district and the State as well.

**Table - 3.28**  
**Area, Production and Productivity of Orange**  
**in Assam and Tinsukia District**

Years	Assam			Tinsukia		
	Area (Ha.)	Production (MT)	Productivity (Kg. per Ha.)	Area (Ha.)	Production (MT)	Productivity (Kg. per Ha.)
2001-02	5,868	67,976	11,584	1,080	17,280	16,000
2002-03	5,960	66,866	11,219	1,085	17,431	16,065
2003-04	7,386	82,711	11,198	1,335	21,343	15,987
2004-05	7,306	82,034	11,228	1,320	21,142	16,017
2005-06	6,630	73,994	11,160	1,320	21,150	16,023
2006-07	8,037	88,137	10,966	1,320	21,132	16,009
2007-08	8,198	89,915	10,968	1,325	21,197	15,998
2008-09	9,727	107,707	11,073	1,455	23,300	16,013

**Source:** Directorate of Horticulture, Govt. of Assam, Guwahati

So far the marketing is concerned, there is no organized marketing arrangement by any Govt./Public Sector undertaking and the exploitation by the commission agents or private traders is rampant. The direct and group marketing are the new initiatives taken by farmers for better price in the local markets within the state only.

***Khasi Mandarin (Citrus reticulata Blanco)***





locally called as “Humthira”, “Kamala”, “Ronga Tenga” etc.

### 3.4.2 Potato

Potato (*Solanum tuberosum* L.) popularly known as ‘The king of vegetables’, has emerged as fourth most important food crop in India after rice, wheat and maize. Indian vegetable basket is incomplete without Potato. Because, the dry matter, edible energy and edible protein content of potato makes it nutritionally superior vegetable as well as staple food not only in India but also throughout the world. Now, it becomes as an essential part of breakfast, lunch and dinner worldwide. Being a short duration crop, it produces more quantity of dry matter, edible energy and edible protein in lesser duration of time than cereals like rice and wheat. Hence, potato may prove to be a useful food item to achieve the nutritional security of the nation. With the present trend of crop diversification and shifting from cereals to horticultural crops and from wheat / barley cultivation to potato cultivation, the farmers are found to reap more returns.

Potato is one of the main commercial crops grown in the country. It is cultivated in 23 states in India. Uttar Pradesh, West Bengal, Bihar, Punjab and Gujarat account for lion’s share in total production. Country has achieved a tremendous growth in potato production during last four to five decades. The annual compound growth rate of potato is higher than other major food

crops in respect of area, production and productivity. In the year 2002-2003, the production was 25 million tonnes while it was 5 million tonnes during 1970. Owing to its significant growth in production, bumper yields have been observed almost every year. Due to bumper crop and lack of adequate post harvest management facilities, glut situations result in the market, which ultimately reduce the prices drastically. Varieties like Kufri, Chipsona-1, Kufri Chipsona-2, Kufri Jyoti, Kufri Luvkar, Kufri Chandramukhi have been released by different research organizations. In India, there is a great scope for cultivation of potato suitable for processing. Further, there is a rising demand for quality processed potato products from the country particularly in Middle East. The countries like Japan, Singapore, Korea, Malaysia and China also have a great demand for processed potato products as well as fresh potato for processing purpose. Thus, the potato processing has opened a new dimension for development of agro based industries

### **Box-3: History of Potato Cultivation**

Potato is a major food crop, grown in more than 100 countries in the world. The native South Americans brought Potato under cultivation possibly 2000 years before the Spanish conquest. In 1537, the Spaniards first came into contact with potato in one of the villages of Andes. In Europe, it was introduced between 1580 A.D. to 1585 A.D. in Spain, Portugal, Italy, France, Belgium and Germany. At present, China, Russia, India, Poland and U.S.A. contribute major shares of the total world production. It was introduced in India by the Portuguese sailors during early 17th century and it's cultivation was spread to North India by the British. It is believed that potato was a native of Andes in South America and gradually spread throughout the world. It is believed that potato was a native of Andes in South America and gradually spread throughout the world.

in the country. Indian potato is preferred worldwide for its taste and meets the international quality standards in terms of disease freeness, shape, size, skin colour, flesh and dry matter content. The Government of India has set up four Agri Export Zones (**AEZs**) in Punjab, West Bengal, Uttar Pradesh and Madhya Pradesh for significant development in this direction. These AEZs are making effort in strengthening and creating infrastructure for export of fresh and processed potato products, with the mandate for handling the export of potato and it's products.

The main objectives of the AEZ set up are to put emphasis on partnership, convergence of different organizations, stakeholders with a focus on providing a package of facilities for export of potato.

### 3.4.2.1 Importance of Potato in Meeting the Food and Nutritional Needs

According to FAO, potato is consumed by more than one billion people the world over. It is a high quality vegetable cum food crop and used in preparing more than 100 types of recipes in India. The popular Indian recipes like *Samosas* and *Alu Paranthis* are prepared from potato. The protein of potato has high biological value than proteins of cereals and even better than that of milk. The biological value of mixture of egg and potato is higher than the egg alone. Hence, potato can be supplement of meat and milk products for improving their taste, lowering energy intake and reducing food cost. From nutritional point of view, potato is a wholesome food and deserves to be promoted as a potential high quality vegetable cum food crop in the country.

**Table - 3.29**  
**Chemical Composition of Potato**

Sl. No.	Constituents	Content (per 100 gms of edible portion)
1	Water	74.70 gm
2	Carbohydrates (Starch and Sugar)	22.60 gm
3	Proteins	1.60 gm
4	Fibre	0.40 gm
5	Fat	0.10 gm
6	Minerals	0.60 gm
i	Calcium	7.70 mg
ii	Copper	0.15 mg
iii	Iron	0.75 mg
iv	Magnesium	24.20 mg
v	Phosphorus	40.30 mg
vi	Potassium	568.00 mg
vii	Sodium	6.50 mg
viii	Vitamin C	14.00 - 25.00 mg
ix	Thiamin	0.18 mg
x	Riboflavin	0.01 - 0.07 mg
xi	Niacin	0.40 - 3.10 mg
xii	Total Folate	5.00 - 35.00 mg
xiii	Pyridoxine	0.13 - 0.25 mg

**Source:** Potato in India, Central Potato Research Institute (CPRI), Shimla

The Table- 3.29 represents the chemical composition of potato. Almost, 74.70% of the edible portion of potato is water followed by Carbohydrates (22.60%), Proteins (1.60%), Minerals (0.60%), Fibre (0.40%) and Fat (0.10%). A single medium-sized potato contains about half the daily adult requirement of vitamin C and 100 gms of edible portion of potato contains 120 calories. Other staples such as rice and wheat have none. Potato is very low in fat, against 5

per cent of the fat content of wheat. Boiled potato has more protein than maize, and nearly twice the amount of calcium.

It is utilized in variety of ways, such as preparation of chips, wafers, flakes, granules, flour, starch, potato-custard powder, soup or gravy thickener, pan cakes as a processed food. As being one of the principal cash crop, it gives handsome returns to the growers/farmers due to it's wide market demand nationally and internationally. Further, it has been reported by the International Food Policy Research Institute (**IFPRI**) and International Potato Centre (**CIP**), that India is likely to have highest growth rate of potato production and productivity during 1993 to 2020. During the same period, demand for potato is expected to rise by 40 per cent worldwide. This indicates a picture about enormous opportunity to capture the huge domestic and international market of potato by producing quality potato and its products.

### 3.4.2.2 Potato Cultivation in Nagaon District

Potato is one of the important cash crops grown in the district of Nagaon. Potato is cultivated in 4,844 hectares which constitutes 6.19% of the total potato areas in the state. The production of potatoes in the district was 24,844 MT during 2008-09 contributing 4.82% of the state's production. The productivity of potatoes in the district was 5,129 Kg. per ha. against 6585 kg./ha. for the state of Assam.

**Table – 3.30**  
**Area, Production and Productivity of Potato**  
**in Assam and Nagaon District**

Years				Assam		
	Area (Ha.)	Production (MT)	Productivity (Kg. per Ha.)	Area (Ha.)	Production (MT)	Productivity (Kg. per Ha.)
2001-02	80,056	620,571	7,752	6,074	58,879	9,694
2002-03	75,486	589,916	7,815	5,845	65,311	11,174
2003-04	77,894	543,075	6,972	5,663	42,018	7,420
2004-05	73,104	589,070	8,058	5,426	54,698	10,081
2005-06	70,000	354,000	5,079	4,090	31,466	7,693
2006-07	77,712	504,557	6,493	4,920	29,735	6,044
2007-08	79,266	516,460	6,516	4,977	30,108	6,049
2008-09	78,317	515,740	6,585	4,844	24,844	5,129

**Source:** Directorate of Horticulture, Govt. of Assam, Guwahati.

Well-drained sandy loam and loam soils, rich in organic matters are suitable for cultivation of potatoes. The ideal time for potato cultivation is from middle of October to middle of November. Seeds, fertilizers and pesticides are available at local seeds agencies. The officers

and field workers of the State Agriculture Department provide extension services. The scientists from Regional Agricultural Research Station, Sillongoni near Nagaon, also provide expert guidance. Maturity of potato crop is 110 to 120 days and the average yield is 175 - 225 quintals per hectare. Potatoes are sold to the different markets at Naltoli, Sonai Bali, Kaliabor, Ranga aloo and at Nagaon wholesale vegetable market.

### Potato Farming in Nagaon



Potato field of Sample Farmers in growing stage



Farmers busy in Harvesting of Potato



Farmers busy in Grading of Potato



Farmers busy in Packaging of Potato

Cultivation of sugar-free potatoes is bringing good health to the farmers in around 19 villages of Nagaon. This is not only because of the consumption alone, by minimising their risk of becoming diabetic, but also for the buy-back arrangement, they entered into. This is fetching them Rs 6 per kg at a time when the other local potato growers in the State are struggling for a market, where they can get only Rs 3 to 4 per kg on bulk selling. These varieties are best suited to produce chips, snacks and other fries. The State Agriculture Department has assisted Surovi Gram Vikash Samity of Bengena-ati in Nagaon to make an agreement with the Kishlay Snack Products to enter into a buy-back agreement for potato cultivation through contract farming. In this system, the produce is sold off through direct marketing from the farmers' doorsteps and they get Rs 6 per kg. The direct marketing saves them from unsavory pangs of the wholesaler

and abolishes the role of the middlemen, besides protecting them from market risk in the form of assured prices.

### **3.5 Study Channels: Traditional Marketing Channel (TMC) and Emerging Marketing Channel (EMC)**

#### **3.5.1 Traditional Marketing Channel (TMC)**

The traditional marketing channels of perishable commodities like fruits and some of the vegetables are circuitous and involve a large number of handling agents in forwarding the produce to the consumers. Due to large number of intermediaries, operating in this unregulated and unsupervised vegetable and fruit markets in Assam, the gap between the producer's price and the consumer's price is much wider.

The traditional channels for orange and potato were identified based on market survey, reports from the growers and discussion with the officials from the Dept.of Agriculture Department's officials for the present study.

The major traditional channels for orange in Tinsukia district of Assam are identified as follows –

#### **Channel- I :**

**Producer → Pre-harvest contractor/ Commission Agent → Retailer → Consumer**

#### **Channel-II :**

**Producer → Pre-harvest contractor/ Commission Agent → wholesaler → Retailer → Consumer**

#### **Channel- III:**

**Producer → Pre-harvest contractor/ Commission Agent → Merchant wholesaler → Wholesaler → Retailer → Consumer**

Similarly, the major traditional channels for potato in Nagaon district of Assam are identified as –

#### **Channel - I**

**Producer → Retailer → Consumer**

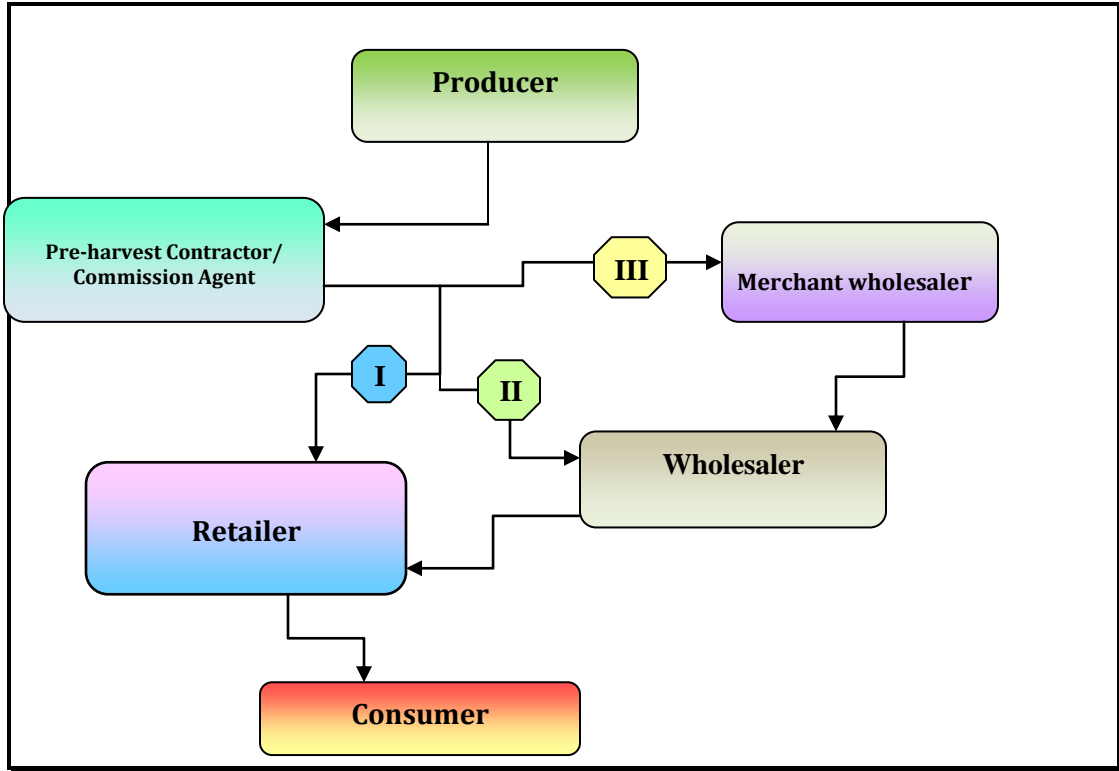
#### **Channel -II**

**Producer → Commission Agent → Wholesaler → Retail → Consumer**

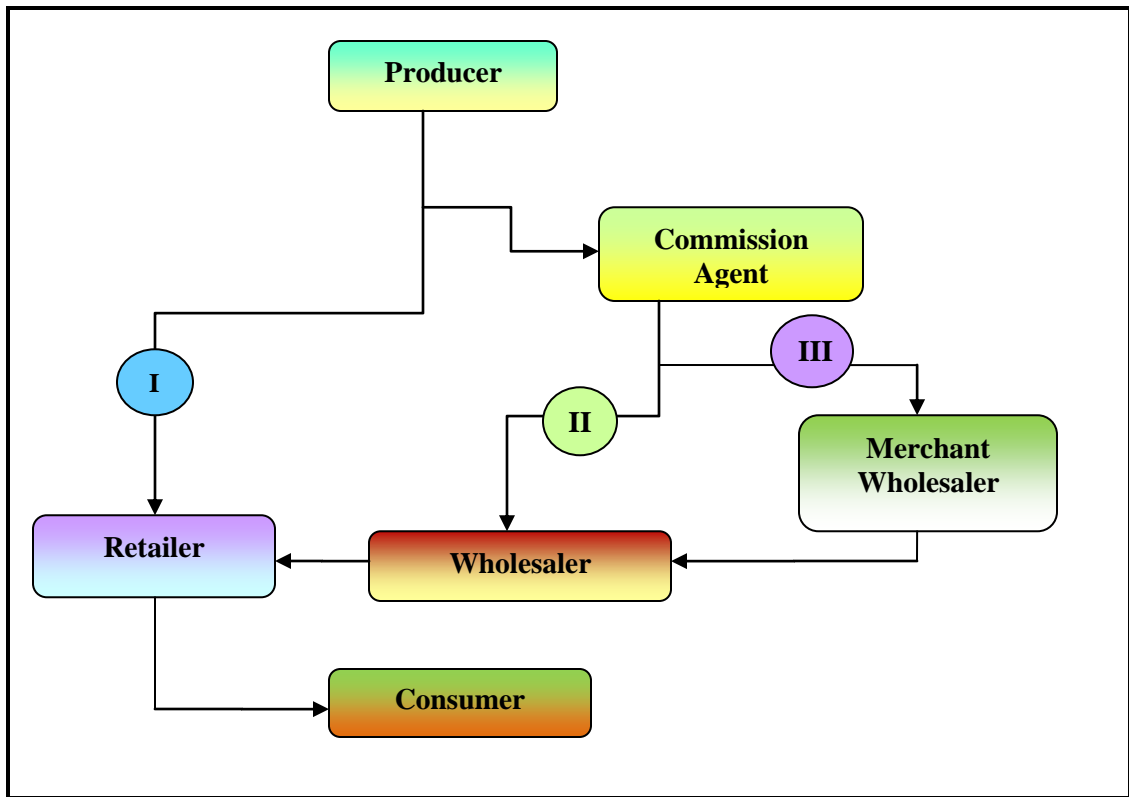
#### **Channel –III**

**Producer → Commission Agent → Merchant wholesaler → Wholesaler → Retailer → Consumer**

**Fig-3.4**  
**Flow Chart of the Major Traditional Marketing Channels for Orange**



**Fig-3.5**  
**Flow Chart of the Major Traditional Marketing Channels for Potato**



### **3.5.2 Emerging Marketing Channel (EMC)**

Direct marketing by farmers, farmers' representative groups or self help groups is being encouraged as an innovative or emerging channel. Direct farmer-to-consumer marketing includes the methods by which farmers sell their products directly to the consumers. Justification for establishing a direct farmer to consumer marketing outlet is based primarily on the producer's desire to increase the financial returns from farm production. This opportunity for increased returns stems from (1) opportunities to reduce marketing costs (and capture profits) attributed to intermediaries (middlemen) in the supply chain, and (2) consumer desire to buy (and willingness to perhaps pay a premium for) riper, fresher, higher-quality fruits and vegetables. These two factors combined have often generated substantially higher net returns for the producers.

Operators of small farms may find that direct marketing translates into additional income when there is insufficient volume or product selection to attract large processors or commercial retail buyers. Thus, direct marketing may be the only viable marketing alternative for small farmers. A substantial number of producers use direct marketing channels to augment sales to wholesalers, retailers, and processors to reduce the risk of relying on a single market channel.

The major orange growing pockets are mostly located in remote rural areas where infrastructural facilities like road communication are very poor. Moreover, because of the economic condition, most of the orange growers could not afford to carry their produce in bulk quantities to the markets. Therefore, they preferred to lease out the orchards to wholesale traders or commission agents. However, the marketing of orange is changing gradually with the introduction of new concept of emerging marketing. Some of the growers are taking initiatives for formation of self help groups or growers' representative groups among them in their respective localities to get remunerative price for their produce through group marketing in bulk quantities directly to the consumers and other market functionaries and orange based industries.

The emerging channels for orange and potato are identified as per market survey, reports from the growers and discussion with the Departmental officials for the present study.

The major emerging channels for orange in Tinsukia district of Assam are as follows:



### **Channel - I**

**Producer** → **Consumer**

### **Channel - II**

**Producer** → **SHG/ Growers' Representative Group** → **Consumer**

### **Channel - III**

**Producer** → **SHG/Growers' Representative Group** → **Fruit processing unit** → **Consumer**

In case of EMC for orange in channel-I, producer bring their produce directly to the local markets of Tinsukia district and sell directly to the consumer. In channel-II, SHG/growers representative group bring the produce from producer and sell directly to the consumer in the local markets of Tinsukia district. In the emerging marketing channel-III for orange, SHG/growers representative group purchase orange from the producer and sell orange to the processing units located at Tinsukia District. Processing units sell orange to the consumer in different processed forms. In channel-II and channel-III, SHG/growers representative group act as immediate buyer to the producer.

Similarly, the major emerging channels for potato in Nagaon district of Assam are as follows:

### **Channel - I**

**Producer** → **Consumer**

### **Channel - II**

**Producer** → **NGO** → **Processing unit (contract farming)** → **Consumer (after value addition)**

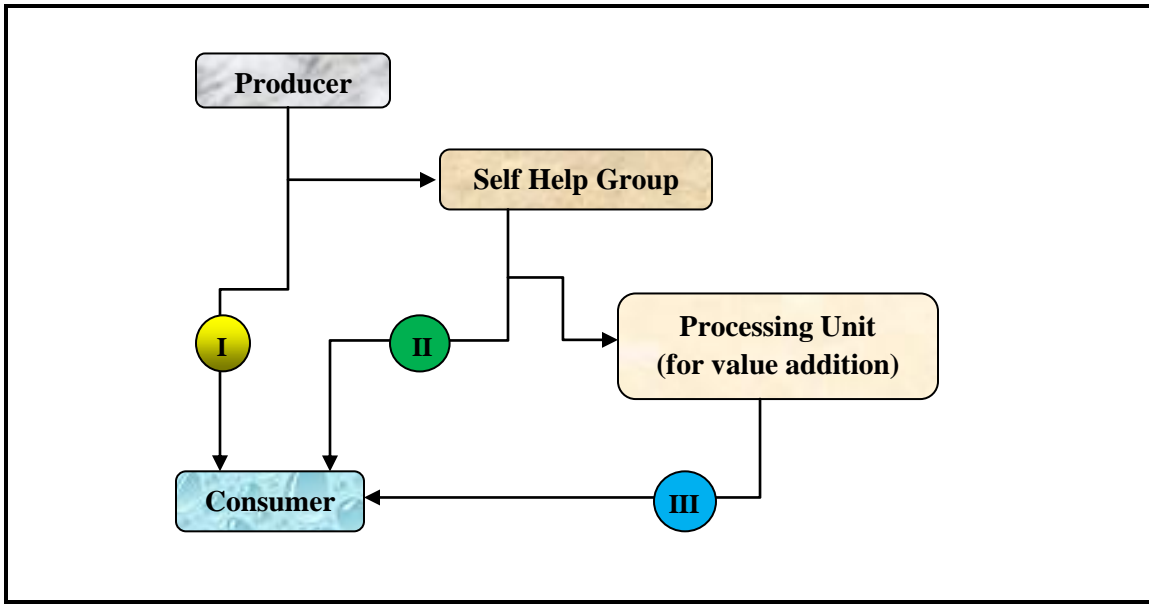
In channel-I for EMC potato, producers bring their produce to the local markets of Nagaon district and sell their produce directly to the consumer. Here, producer has to incur all the marketing cost by himself. In this channel there are no market intermediaries.

In case of channel-II for EMC potato, NGO collects potato from the producer according to buy-back agreement through contract farming and supplies to the processing units viz.- M/S Kishlay Snack Products. Finally, the processing unit sells potato in different processed forms.

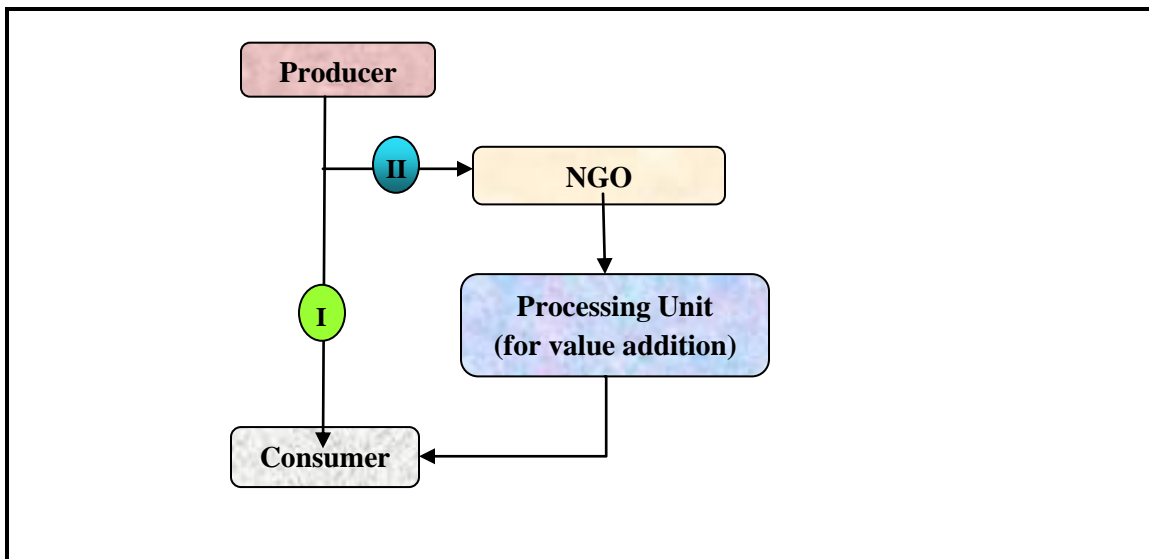
It has already been mentioned elsewhere in the report that amendments have been made in APMC Act to allow contract farming in the agriculture markets. In this study, we have found contract farming in the Nagaon district of Assam for the crop potato. A Non -Government Organization (NGO) viz. - Bengena-Ati Surovi Gram Vikash Samity has made an agreement

with the M/S Kishlay Snack Products, a Regd. partnership firm under the Indian Partnership Act, 1932 having its registered Head Office at Dewan Patty, Fancy Bazar, Guwahati and processing unit at Lakhra Chariali, Guwahati. This type of Buy-back agreement for potato cultivation through contract farming from October, 2006 onwards is the first of its kind in Nagaon district as well as in the North East India.

**Fig.-3.6**  
**Flow Chart of the Major Emerging Marketing Channels for Orange**



**Fig.-3.7**  
**Flow Chart of the Major Emerging Marketing Channels for Potato**



The NGO used to buy special processing variety of potato seeds viz.- Kufri Chip Sona-I,II, LR-1533 ,Atlanta etc. from the M/S Kishlay Snack Products at a pre agreed price (Rs.1500/- per quintal in the reference year). As per the agreement, M/S Kishlay Snack Products buys back all the produced potatoes as per pre-fixed terms and conditions and at a mutually agreed price (Rs.600/- per quintal in the reference year) from the Bengena-Ati Surovi Gram Vikash Samity.

As per terms and conditions, the NGO on behalf of M/S Kishlay Snack Products has to bear all the expenses on the inputs to the respective potato farmers registered with them, in advance. The inputs and activities include land preparation, seeds, irrigation, manures and fertilizers, plant protection measures, grading, packing, loading etc. The value of the inputs supplied to the farmers in kind or cash are to be adjusted at the time of procurement of the product after harvest. Finally, the company on receipt of consignment at their factory makes the payment to the NGO. M/S Kishlay Snack Products also provides full technical support to the farmers for a particular crop season of potato.

#### **Determination of prices of crops under study (orange and potato)**

For determination of prices in TMC for both the crops, there is no as such role of farmers as there are no minimum support prices of these perishable commodities in the state. There is no provision of auction market for these commodities in the state also. Prices of orange and potato usually determined by the pre-harvest contractor/commission agent (immediate buyer to the producers) on the observation of the previous year market prices. The quantum of production in the current year as compared to previous year also plays an important role in determination of the prices of the crops. At retail level, prices are determined on the situation of the market i.e. supply and demand factors.

In EMC for both the crops, farmers are in advantageous stage as they sell their produce through direct marketing or group marketing without much interference by the market intermediaries. Here, prices are determined on the situation of the market and quality of the produce in terms of size, maturity and ripeness/freshness. But, in case of contract farming under EMC for potato, producer receives the mutually agreed price for their produce as per the buy-back agreements with pre-fixed terms and conditions.

\*\*\*\*\*

## CHAPTER - IV

### COMPARISON OF THE BENEFITS AND CONSTRAINTS FOR THE AGENTS TRADING IN THE TMC AND EMC

#### 4.1 Introduction

In this chapter, an attempt has been made to compare of the benefits and constraints for the Agents trading in the TMC and EMC with the help of field level data collected from the sample farmers.

#### 4.2 Average Net Operated Area of Sample Farmers

Table-4.1 shows average net operated area of sample farmers according to farm size groups for orange and potato. The overall percentages of net operated area to total were highest (36.03 per cent) in large size farm group while it was lowest (9.57 per cent) in marginal size farm group for orange. On the other hand for potato,

**Table - 4.1**

**Average Net Operated Area of Sample farmers  
according to farm size groups**

Farm size Groups	Orange			Potato		
	TMC	EMC	Over all	TMC	EMC	Over all
Marginal	<b>0.86</b> (13.76)	<b>0.85</b> (6.41)	<b>0.86</b> (9.57)	<b>0.85</b> (12.73)	<b>0.91</b> (8.67)	<b>0.87</b> (10.64)
Small	<b>1.65</b> (29.61)	<b>1.62</b> (14.64)	<b>1.63</b> (21.08)	<b>1.56</b> (29.70)	<b>1.43</b> (27.19)	<b>1.49</b> (28.41)
Medium	<b>2.82</b> (28.25)	<b>2.74</b> (37.15)	<b>2.77</b> (33.32)	<b>2.81</b> (33.79)	<b>2.59</b> (39.53)	<b>2.68</b> (36.74)
Large	<b>4.73</b> (28.38)	<b>5.54</b> (41.80)	<b>5.24</b> (36.03)	<b>5.92</b> (23.69)	<b>6.46</b> (24.61)	<b>6.19</b> (24.21)
Over all	<b>2.00</b> (100.00)	<b>2.65</b> (100.00)	<b>2.33</b> (100.00)	<b>1.99</b> (100.00)	<b>2.10</b> (100.00)	<b>2.05</b> (100.00)

**Note:** Figures in parenthesis are the percentages of net operated area.

the overall percentages of net operated area to total were highest (36.74 per cent) in medium size farm group while it was lowest (10.64 per cent) in marginal size farm group.

The characteristics of sample orange growers as per land holding classification is presented in Table- 4.2. Table shows that the average family size in case of TMC, varied from 5.00 to 6.17 with an overall average of 5.62 while in case of EMC, average family size varied from 4.60 to 5.60 with an overall average of 5.28. The table also reflects that agriculture was the main occupation of the sample farmers for both TMC and EMC.

**Table - 4.2**  
**Characteristics of Sample Orange Growers as per land holding Classification**

Farm Size with Sample Size → Characteristics ↓	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	16	10	18	12	10	18	6	10
Average Age of the Head (in Years)	55.96	53.70	53.88	53.90	54.94	54.00	57.60	54.61	61.83	51.50
Average Years of Education for the Head	6.98	7.78	6.88	6.70	7.39	7.83	6.10	7.61	5.50	9.10
Average Family Size (nos.)	5.62	5.28	5.81	5.60	5.61	5.42	5.00	5.39	6.17	4.60
<b>Main Occupation (% to Total)</b>										
a. Agriculture	76.00	70.00	87.50	90.00	66.67	75.00	70.00	66.67	50.00	50.00
b. Allied	14.00	18.00	12.50	10.00	16.67	16.67	20.00	22.22	33.33	20.00
c. other	10.00	12.00	0.00	0.00	16.67	8.33	10.00	11.11	16.67	30.00

The characteristics of sample potato growers as per land holding classification is presented in Table-4.3. It can be observed from the table that the average family size in case of EMC varied from 6.20 to 7.75 with an overall average of 7.22 while in case of TMC, it varied from 6.79 to 8.50 with an overall average of 7.48. Further, agriculture was recorded to be the main occupation of sample potato growers.

**Table - 4.3**  
**Characteristics of Sample Potato Growers as per land holding Classification**

Farm Size with Sample Size → Characteristics ↓	Over all		Marginal		Small		Medium		Large	
	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC	TMC	EMC
	50	50	15	10	19	20	12	16	4	4
Average Age of the Head (in Years)	51.82	51.70	49.27	48.50	52.16	52.25	51.25	53.31	61.50	50.50
Average Years of Education of the Head	4.84	4.90	4.73	4.80	4.95	4.30	4.75	5.31	5.00	6.50
Average Family Size (nos.)	7.48	7.22	7.47	6.20	6.79	7.45	8.25	7.75	8.50	6.50
<b>Main Occupation (% to Total)</b>										
a. Agriculture	70.00	68.00	73.33	70.00	73.68	70.00	58.33	68.75	75.00	50.00
b. Allied	18.00	20.00	26.67	30.00	15.79	15.00	25.00	18.75	0.00	25.00
c. other	12.00	12.00	0.00	0.00	10.53	15.00	16.67	12.50	25.00	25.00

### 4.3 Modern practices and method of cultivation

The modern practices and methods of cultivation adopted by sample farmers are presented in Table-4.4. It was observed from the Table that 100 per cent of farmers in the sample used chemical fertilizers and compost. The per hectare consumption of fertilizers for orange crop were found to be 147.27 kg and 141.60 kg for TMC and EMC sample farmers, respectively.

**Table – 4.4**  
**Modern Practices and Methods used by Sample Farmers**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Average Area Under Crop (Ha.)</b>	0.47	0.48	0.33	0.35
<b>Fertilizer Used</b>				
Chemical Fertilizer per ha. (Kgs)	147.27 (4.49)	141.60 (8.65)	522.97 (5.65)	568.19 (1.99)
% of Farmers using chemical fertilizer	100.00	100.00	100.00	100.00
Organic Fertilizer (Kgs)	117.50 (5.76)	129.60 (7.53)	237.60 (1.62)	262.50 (1.34)
% Using compost	100.00	100.00	100.00	100.00
Organic Pesticide (Kgs)	0.00	0.00	0.00	0.00
% Farm certified as organic	0.00	0.00	0.00	0.00
<b>% of Machinery Used</b>				
Tractor / Power Tiller	60.00	78.00	78.00	100.00
Sprayer	100.00	100.00	100.00	100.00
<b>Plot irrigated</b>				
% irrigated by Sprinkler	0.00	0.00	0.00	0.00
% irrigated by Drip	0.00	0.00	0.00	0.00
% irrigated by Pump sets (ground water)	0.00	0.00	100.00	100.00
% irrigated by other sources	0.00	0.00	0.00	0.00
<b>Storage</b>				
% having own Storage	0.00	0.00	0.00	0.00
% hiring Storage	0.00	0.00	0.00	72.00
<b>% reporting hiring Labour</b>	82.00	94.00	94.00	70.00
<b>Seed (in Kgs)</b>	-	-	742.20 (0.57)	792.00 (0.98)
<b>Sources of seeds</b>				
Home Grown (%)	-	-	0.00	0.00
Purchased (%)	-	-	100.00	100.00
Home Grown & Purchased	-	-	0.00	0.00

**Note:** Figures with in brackets are the Standard Deviations.

Similarly, the per hectare consumption of fertilizers for potato were calculated at 522.97 kg and 568.19 kg for TMC and EMC sample farmers, respectively. It can be observed from the table that per hectare consumption of chemical fertilizer and organic fertilizer was higher for potato cultivation as compared to orange cultivation. Potato area for TMC and EMC were 100 per cent irrigated through pump sets (STW).

Table-4.5 shows the comparison of labour hiring and labour cost share in total cost for both the crops. It is indicated in the table that for orange cultivation against TMC, labour cost share was 52.38 per cent of the total cost while it was 50.78 per cent in case of EMC. On the other hand, in case of potato cultivation labour cost share in total cost was 17.02 per cent for TMC while it was 17.13 per cent in case of EMC.

**Table – 4.5**  
**Comparison of labour hiring and labour cost share in total cost**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Total Labour</b>				
% of Hired Labour	68.30	75.20	65.70	70.50
% of family Labour	21.70	24.80	34.30	29.50
<b>Cost per hectare</b>				
Labour Costs	24,139.42	24,648.20	10,781.03	10,942.00
	(372.43)	(391.66)	(262.67)	(207.70)
Other paid out Cost	21,945.78	23,892.08	52,579.45	52,943.94
	(252.00)	(407.18)	(341.57)	(202.11)
Total Production Costs	46,085.20	48,540.28	63,360.48	63,885.94
<b>Labour Cost Share in Total Cost</b>	<b>52.38</b>	<b>50.78</b>	<b>17.02</b>	<b>17.13</b>

**Note:** Figures within brackets are the Standard Deviations.

It may be noted here that labour cost share in total cost was found to be higher in orange cultivation than potato cultivation mainly due to its labour intensive nature. During the harvesting time, more labours are required for plucking of orange. Secondly, potato cultivation is a short duration crop and the crop is grown as second crop.

#### **4.5 Economics of cultivation**

Table-4.6 depicts the production and cost of cultivation of orange and potato of the Sample farmers. Table shows that per hectare productivity of orange in TMC was 159.64 qtls. and it was 163.77 qtls. in EMC. However, the productivity of potato was higher than orange, which was worked out at 236.79 qtls. in TMC and 238.17 qtls. in EMC sample.

The per qtls. production cost of orange in TMC was found to be Rs.284.11 and in case of EMC, it was worked out at Rs.296.39 while for potato the per qtls. production cost in TMC was found to be Rs.267.58 and in case of EMC, it was found at Rs.268.24. The average production cost of marketed product of orange in TMC was worked out at Rs.20,867.75 and it was found at Rs.17,238.22 for EMC. The average production cost of marketed product for potato varied from Rs.19,961.53 to Rs.21,367.74 for TMC and EMC, respectively.

**Table - 4.6**  
**Production and Cost of cultivation of Orange and Potato**  
**of the Sample farmers**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Production</b>				
Average Area Cultivated (Ha.)	0.47	0.48	0.33	0.35
Average Total Production (Qtls.)	75.03	78.61	78.14	83.36
Average Yield (Qtls/ha)	159.64 (12.07)	163.77 (11.10)	236.79 (9.43)	238.17 (10.29)
<b>Cost per hectare</b>				
Labour Costs	24,139.42 (372.43)	24,648.20 (391.66)	10,781.03 (262.67)	10,942.00 (207.70)
Other paid out Cost	21,945.78 (252.00)	23,892.08 (407.18)	52,579.45 (341.57)	52,943.94 (202.11)
Total Production Costs	46,085.20	48,540.28	63,360.48	63,885.94
<b>Production Costs per Qtl.(Rs)</b>	<b>284.11</b>	<b>296.39</b>	<b>267.58</b>	<b>268.24</b>
<b>Total Production Costs of Average Cultivated Area (Rs)</b>	<b>21,660.04</b>	<b>23,299.33</b>	<b>20,908.96</b>	<b>22,360.08</b>
<b>Disposal (Qtls.)</b>				
Production	75.03	78.61	78.14	83.36
wastage on Farm	0.51	0.53	1.15	1.46
Local Sales (not in specified channel) and other disposals**	0.00	18.88	0.00	0.00
Home Consumption	1.07	1.04	2.39	2.24
Marketed *	73.45	58.16	74.60	79.66
<b>Total Production Cost of Marketed Product</b>	<b>20,867.75</b>	<b>17,238.22</b>	<b>19,961.53</b>	<b>21,367.74</b>

Notes: \*Marketed= Total amount taken to specific channel for sale

\*\* Not taken to the Channel

Figures within brackets are the Standard Deviations.

Table- 4.7 shows the average marketing cost of marketed product of the sample farmers. It can be observed from the table that average quantity sold by farmer to specific marketing channel for orange in TMC was 73.45 qtls. and was 56.01 qtls. for EMC. The average quantity sold by farmer to specific marketing channel for potato in TMC was 58.18 qtls. and was 47.80 qtls. for EMC. The farmers received average gross price of Rs.967.00 per quintal for orange through TMC and Rs.1469.40 per quintal for EMC. It was seen that farmers in EMC received 51.91 per cent more income as compared to TMC in case of orange.

In case of potato farmers, per quintal average gross income was Rs.473.62 and Rs.600.00 for TMC & EMC, respectively. Thus, the average gross income received in EMC was 26.68 per cent higher than TMC. Although, EMC is a new introduction in Assam, from the analysis of the table, it may be concluded that marketing through EMC is more profitable than marketing through TMC. Per quintal farmers average marketing cost for orange in EMC was found at Rs.332.57. It



may be noted here that per quintal farmers marketing cost for orange through TMC was nil as the market intermediaries

involved in orange marketing collected the produce from farmer's field itself. Per quintal farmers average marketing cost for potato in TMC was Rs.52.76 and per quintal farmers average marketing cost for EMC was Rs.54.53.

**Table - 4.7**  
**Average Marketing Cost of Marketed Product of the sample Farmers**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Average per Farmer Quantum Transected</b>				
Quantity Sold (Qtls) by Farmer to Specified Market Channel	73.45	56.01	58.18	47.80
Price Paid for purchase (Rs./Qtl) from farmer	967.00	1469.40	473.62	600.00
<b>Total Cost at which produce was sold</b>	<b>71,026.15</b>	<b>82,301.09</b>	<b>27,555.21</b>	<b>28,680.00</b>
<b>Marketing Cost to sell it to the Next agent - Wholesaler/Retailer(Rs/Quintal)</b>				
Loading and Unloading Cost	0.00	90.00	10.00	10.00
Transport Cost	0.00	129.86	25.00	9.00
Commission Charges	0.00	0.00	0.00	0.00
Storage Cost	0.00	0.00	0.00	16.67
Mandi Tax	0.00	0.00	0.00	0.00
Development Cess	0.00	14.69	4.74	5.20
Weighing Cost	0.00	5.00	5.00	5.00
Brokerage Expenses	0.00	0.00	0.00	0.00
Wastage	0.00	83.02	6.02	6.66
Other fees paid (Market fees)	0.00	10.00	2.00	2.00
<b>Total Farmers Marketing Cost</b>	<b>0.00</b>	<b>332.57</b>	<b>52.76</b>	<b>54.53</b>

Table - 4.8 shows the disposal of marketed product of the sample farmers. Table shows that for orange, the total quantum sold through TMC was 73.45 quintals and 57.15 quintals through EMC. And for potato, the total quantum sold through TMC was 73.63 quintals and 79.43 qtls. in EMC.

Table further demonstrates that total sale of orange in TMC & EMC were worked out at Rs.71,026.25 and Rs.83,406.67, respectively. Similarly, total sale of potato in TMC was found at Rs.35, 525.40 and for EMC it was Rs.42, 070.88. **Table-4.8**

**Disposal of Marketed Product of the sample Farmers**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Disposal (Qtls)</b>				
Quantum taken to the Specified Market (Marketed)	73.45	58.15	74.60	79.66
Quantity Sold in Specified Market	73.45	56.01	58.18	47.80
Quantity not Sold in Specified Market (if rejected etc. specify)	0.00	0.00	0.00	0.00
Quantity sold in (elsewhere) retail market (Direct marketing)	0.00	1.14	15.45	31.63
Any other Disposal (Wastage in marketing etc.)	0.00	1.00	0.97	0.23
<b>Total Quantum Sold</b>	<b>73.45</b>	<b>57.15</b>	<b>73.63</b>	<b>79.43</b>
<b>Sales</b>				
Quantity Sold in Specified Market (Qtls)	73.45	56.01	58.18	47.80
Price in Specified Market (Rs.)	967.00	1,469.40	473.62	600.00
Sales in Specified Market (Rs.)	71,026.15	82,301.09	27,555.21	28,680.00
Quantity Sold elsewhere (Qtls)	0.00	1.14	15.45	31.63
Price elsewhere (Rs.)	0.00	969.80	515.87	423.36
Sales elsewhere (Rs.)	0.00	1,105.57	7,970.19	13,390.88
<b>Total Farmers Sale (TFS)</b>	<b>71,026.15</b>	<b>83,406.67</b>	<b>35,525.40</b>	<b>42,070.88</b>

Table- 4.9 shows the average cost and margin of marketed product of the sample farmers. It can be observed from the Table that the average per quintal farmers cost for orange in TMC was Rs. 290.27 and Rs.303.80 for EMC while in case of potato the average per quintal cost for TMC was Rs.267.58 and Rs.270.99 for EMC.

**Table-4.9**  
**Average Cost and Margin of Marketed Product of the sample Farmers**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Cost Per Quintal (Rs.)</b>				
Marketing Cost Per Quintal	0.00	332.57	52.76	54.53
Production Cost Per Quintal	290.27	303.80	267.58	270.99
Total Per Quintal Farmers Cost	290.27	636.37	320.34	325.52
<b>Average Returns (Rs.)</b>				
Total Sales	71,026.15	83,406.67	35,525.40	42,070.88
Total Farmers Costs	21,320.33	37,005.19	23,897.13	25,930.92
Average Farmers Price (AFP)	967.00	1,434.34	476.21	528.13
Marketing Cost as % of AFP	0.00	23.19	11.08	10.33
Marketing Cost as % of TFS	0.00	23.19	11.08	10.33
Average Farmers Margin (AFM) Rs./Qtl.	682.89	797.96	155.87	202.61
<b>Quantity Sold (Quintals)</b>				
Price at which it was Sold (Rs.)	967.00	1,434.34	476.21	528.13
Wastage (Quintals)	0.00	1.00	0.97	0.23
Value of Wasted Oranges	0.00	1,434.34	461.93	121.47
Unsold Produce (Quintals)	0.00	0.00	0.00	0.00

Total Sales	71,026.15	83,406.67	35,525.40	42,070.88
Total Farmers Costs	21,320.33	37,005.19	23,897.13	25,930.92
Margin of The Farmer (Rs.)	50,158.40	46,401.48	11,628.27	16,139.95
<b>Margin per Quintal Sold (Rs.)</b>	<b>682.89</b>	<b>797.96</b>	<b>155.87</b>	<b>202.61</b>

Table also indicates that average farmer margin for orange was 37.85 per cent higher in EMC than TMC for orange while in case of potato the average farmer margin was 38.84 per cent higher in EMC as compared to TMC.

The details of economics of cultivation of the sample farmers are presented in Table-4.10. BCR was worked out for orange and it was found at 3.33 in TMC and 4.72 for EMC while for potato, it was found at 1.78 for TMC and 1.95 for EMC. It can be observed from the Table that BCR was higher in EMC for both orange and potato as compared to TMC.

**Table-4.10**  
**Economics of Cultivation of the Sample Farmers**

Particulars	Orange		Potato	
	TMC	EMC	TMC	EMC
<b>Total Production (Qtls.)</b>	<b>75.03</b>	<b>78.61</b>	<b>78.14</b>	<b>83.36</b>
<b>Total Marketed (Qtls.)</b>	<b>73.45</b>	<b>58.15</b>	<b>74.60</b>	<b>79.66</b>
Total Marketing Cost (TMC) ( in Rs.)	0.00	19,339.22	3,935.60	4,343.86
Total Production Cost (TPC) ( in Rs.)	21,320.33	17,665.97	19,961.53	21,587.06
Total Farmer's Cost (TFC) ( in Rs.)	21,320.33	37,005.19	23,897.13	25,930.92
Total Farmers Sale (TFS) ( in Rs.)	71,026.15	83,406.67	35,525.40	42,070.88
Farmer's Margin (TFS - TFC) ( in Rs.)	49,705.82	46,401.48	11,628.27	16,139.95
<b>Farmer's Margin per Quintal (in Rs.)</b>	<b>676.73</b>	<b>797.96</b>	<b>155.87</b>	<b>202.61</b>
<b>BCR (Gross Return / Total Production Cost)</b>	<b>3.33</b>	<b>4.72</b>	<b>1.78</b>	<b>1.95</b>
<b>Place of Sale</b>				
% Sold at the Farm Gate	0.00	0.00	0.00	0.00
% Sold in Regulated Market	0.00	75.49	0.00	0.00
% Sold in Contract Farming (buy back)	-	-	-	60.18
% Sold in Local Market	0.00	24.51	15.45	9.31
% Sold to Commission Agent	100.00	0.00	58.18	30.51
% Sold in the form of E-Trading	0.00	0.00	0.00	0.00

#### 4.6 Post Harvest Losses

The fruit and vegetable sector has a vital role in farm income enhancement, poverty alleviation, food security, and sustainable agriculture. This sector, however, suffers greatly from postharvest losses. Some estimates suggest that about 10–40% of fruit and vegetables are lost or abandoned after leaving the farm gate. Huge postharvest losses result in diminished returns for producers. Both orange and potato suffer from post harvest losses.

Table- 4.11 shows per quintal post harvest losses of orange and potato. It was observed from the Table that post harvest losses in TMC was higher as compared to EMC for both the crops.

**Table - 4.11**  
**Per Quintal Post Harvest Losses**

(Quantity in Kg.)

Post Harvest Loss	Orange				Potato			
	TMC		EMC		TMC		EMC	
	Quantity	SD	Quantity	SD	Quantity	SD	Quantity	SD
On Farm	0.68	0.05	0.67	0.04	1.47	0.68	1.75	1.12
Loss during Transportation	6.86	1.18	5.43	1.40	1.27	0.27	1.10	0.91
Loss during Storage (Market Level)	8.33	1.01	-	-	2.79	0.32	3.15	-
Loss at retail level	3.28	1.39	2.86	1.23	1.47	0.23	-	-

Note: SD - Standard Deviation

The main reasons for post harvest losses as reported by sample farmers are presented in Table-4.12. All orange farmers in the sample for both TMC and EMC opined that important causes for post harvest losses were perishable nature of the commodity and lack of proper storage. Fifty per cent of the sample farmers reported long distance to market also led to post harvest losses. On the other hand, in case of

**Table 4.12**  
**Reasons for Post Harvest Losses**

(Percentages of multiple responses)

Reasons	% to total Responses			
	Orange		Potato	
	TMC	EMC	TMC	EMC
Perishable nature of the commodity	100.00	100.00	64.00	60.00
Long distance to market	50.00	50.00	0.00	0.00
Loss as waited for better prices	0.00	26.00	30.00	0.00
Lack of proper storage	100.00	100.00	60.00	70.00

potato, post harvest losses in TMC were attributed to perishable nature of the commodity (64 per cent), lack of proper storage (60 per cent) and loss as waited for better prices (30 per cent). While for EMC, 60 per cent of the sample farmers opined that perishable nature of potato resulted in to post harvest losses and 70 per cent farmers pointed out that dearth of storage facility was yet another cause of post harvest losses.

#### 4.7 Temporal Distribution of Sales

Temporal distribution of sales of orange and potato for the sample farmers are presented in Table-4.13. Harvesting season of orange starts from the month of November till the mid of January. It was observed from the Table that for both TMC and EMC, more than 73 per cent of orange was sold by the farmers in December.

With respect to potato, harvesting time in our study area was found to be February and March. Table shows that for TMC, 54.94 per cent of potato was sold by the farmer in February and 45.06 per cent was sold in March while for EMC, 40 per cent of potato was sold in February and 60 per cent was sold in March.

**Table - 4.13**  
**Temporal Distribution of Sales**

Particulars	Orange				Potato			
	TMC		EMC		TMC		EMC	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Total Sales</b>	<b>73.45</b>	<b>100.00</b>	<b>58.15</b>	<b>100.00</b>	<b>73.63</b>	<b>100.00</b>	<b>79.43</b>	<b>100.00</b>
<i>For Orange</i>								
Month 0: November	7.53	10.25	4.20	7.22	-	-	-	-
Month 1: December	54.28	73.90	42.60	73.26	-	-	-	-
Month 2: January	11.64	15.85	11.35	19.52	-	-	-	-
Not Sold	0.00	0.00	0.00	0.00	-	-	-	-
<i>For Potato</i>								
Month 0: February	-	-	-	-	40.45	54.94	31.77	40.00
Month 1: March	-	-	-	-	33.18	45.06	47.66	60.00
Not Sold	-	-	-	-	0.00	0.00	0.00	0.00

#### 4.8 Information Regarding Price Available to Farmers

Farmers always expect a reasonable price for their produce. Therefore, it is utmost necessary for the farmers to have an idea of the current market price of their produce, which is helpful for the farmers to dispose off their produce in right time. Details about the source of price information are shown in Table - 4.14. Farmers in both the crops for TMC and EMC collected the information personally or by discussing with other farmers and commission agent/traders. Farmers in the sample reported that they did not get any information on price from AGMARKNET.

**Table 4.14**  
**Details about Marketing Information**

Particulars		% to total Responses			
		Orange		Potato	
		TMC	EMC	TMC	EMC
<b>A. Source of Price Information</b>					
1	Personal information	50.00	76.00	62.00	90.00
2	Speaking with other farmers	86.00	70.00	84.00	90.00
3	Speaking with Commission agent/Trader	40.00	20.00	72.00	20.00
4	Speaking with the E-choupal agent	0.00	0.00	0.00	0.00
5	Any other	0.00	0.00	0.00	0.00
<b>6</b>	<b>Two responses</b>	<b>58.00</b>	<b>66.00</b>	<b>80.00</b>	<b>74.00</b>
a	1&2	26.00	36.00	20.00	46.00
b	1&3	12.00	10.00	30.00	18.00
c	1&4	0.00	0.00	0.00	0.00
d	1&5	0.00	0.00	0.00	0.00
e	2&3	20.00	20.00	30.00	10.00
f	2&4	0.00	0.00	0.00	0.00
g	3&4	0.00	0.00	0.00	0.00
<b>7</b>	<b>Three responses</b>	<b>10.00</b>	<b>6.00</b>	<b>16.00</b>	<b>14.00</b>
a	1,2&3	10.00	6.00	16.00	14.00
b	1,2&4	0.00	0.00	0.00	0.00
c	2,3&4	0.00	0.00	0.00	0.00
<b>B. Time of Price information</b>					
1	At the time of harvest/sale	40.00	52.00	90.00	20.00
2	At the time of sale	60.00	48.00	10.00	80.00
<b>C. Price information from AGMARKNET portal</b>					
1	No	100.00	100.00	100.00	100.00
2	Yes	0.00	0.00	0.00	0.00
<b>D. Different in Price Information</b>					
1	lower than expected	0.00	0.00	18.00	0.00
2	Similar to what expected	80.00	82.00	70.00	100.00
3	Higher than expected	0.00	18.00	12.00	0.00
<b>E. Time of Price Agreement</b>					
1	At the time of sale	20.00	100.00	100.00	0.00
2	By previous agreement	80.00	0.00	0.00	100.00
<b>F. Difference between agreed price and sale price</b>					
1	Less	0.00	0.00	0.00	0.00
2	Same	100.00	100.00	100.00	100.00
3	A bit more	0.00	0.00	0.00	0.00
<b>G. No of times went to the agent to get payment</b>					
1	None	70.00	100.00	100.00	100.00
2	Various times	30.00	0.00	0.00	0.00
<b>H. Merchant fulfilment</b>					
1	Bad record	0.00	-	0.00	-
2	Satisfactory record	95.00	-	80.00	-
3	Good record	5.00	-	20.00	-
<b>I. Receipt for sales</b>					
1	No	100.00	-	42.00	0.00
2	Yes	0.00	-	58.00	100.00
<b>J. Conflict on quality</b>					
1	Yes	0.00	0.00	0.00	0.00
2	No	100.00	100.00	100.00	100.00
<b>F. Conflicts any other</b>					
1	Because of Rain	0.00	0.00	0.00	0.00
2	Production rejected	0.00	0.00	0.00	0.00
<b>K. How was it resolved</b>					
1	By APMC/Company Person	-	-	-	-

<b>L. Confidence in the merchant</b>					
1	Low	0.00	-	0.00	-
2	High	100.00	-	100.00	-

#### 4.9 Credit

Credit plays an important role to meet different requirement of the farmers. Farmers generally borrow money from different institutional and non-institutional sources. However, in our samples for both the crops, farmers reported that they did not take any loan from institutional and non-institutional sources. It may be mentioned here that the orange farmers in TMC and potato farmers in EMC took only input advances from the buyer without any interest.

#### 4.10 Access to inputs from the buyer

Access to inputs by the sample farmer from the buyer is presented in the Table-4.15. It was observed from the Table that under TMC, 74 per cent farmers received input advance (fertilizer and pesticides) from the commission agent in case of orange and for potato, 100 per cent farmers received input advance (fertilizer ,pesticides, improved seeds ,knowledge on crop practices, extension support) from the buyer under EMC.

**Table 4.15**  
**Access to Inputs from the Buyer**

Particulars		Orange		Potato	
		TMC	EMC	TMC	EMC
<b>A. Received Input Advance for the reference period (% of responses)</b>					
1	No	26.00	100.00	100.00	0.00
2	Yes	74.00	0.00	0.00	100.00
<b>B. Types of Inputs</b>					
1	Seeds	0.00	-	-	0.00
2	Improved Seeds	0.00	-	-	100.00
3	Fertilizers	74.00	-	-	100.00
4	Pesticides	74.00	-	-	100.00
5	Knowledge on Crop Practices	0.00	-	-	100.00
6	Extension Support	0.00	-	-	100.00
<b>C. Value of the Input (Rs./farmer)</b>		<b>1,280/-</b>	-	-	<b>18,711/-</b>
<b>D. Reason for the procuring the input of the Buyer (% of responses)</b>					
1	Easily available on Credit (0% interest)	74.00	-	-	100.00
2	Extension Service Support	0.00	-	-	100.00

It was observed that farmers preferred to take advances from the buyer, as they did not pay any interest on input advance. At the time of final payment for the produce, buyer just deducted the input advance.

#### 4.11 Perception of market infrastructure by farmers

Adequate market infrastructure is an important condition for building up of an efficient marketing system for orange and potato because of their perishable nature. Table- 4.16 shows the perception of the sample farms about the market infrastructure. In case of TMC for orange 40 per cent farmers expressed their views that condition of the roads to market was average and 60 per cent opined as good while for EMC,

50 per cent opined as average and 50 per cent opined as good. On the other hand, TMC for potato 46 per cent farmers expressed their views that condition of the village roads to market was average and 54 per cent opined as good while for EMC, 40 per cent opined as average and 60 per cent reported as good. With respect

**Table 4.16**  
**Perception of the Market Infrastructure**

Particulars		% to total Responses			
		Orange		Potato	
		TMC	EMC	TMC	EMC
<b>A. Condition of the road to market</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	40.00	50.00	46.00	40.00
3	Good	60.00	50.00	54.00	60.00
<b>B. Proximity of market</b>					
1	Within the village	0.00	0.00	0.00	0.00
2	Within 10 kms	0.00	0.00	50.00	50.00
3	between 10 & 25 kms	50.00	50.00	50.00	50.00
4	>25 kms & < 50 kms	50.00	50.00	0.00	0.00
5	more than 50 kms	0.00	0.00	0.00	0.00
<b>C. Go down facilities</b>					
1	Not Available	0.00	0.00	0.00	0.00
2	Bad	60.00	50.00	0.00	0.00
3	Average	40.00	50.00	100.00	100.00
4	Good	0.00	0.00	0.00	0.00
<b>D. Cold storage</b>					
1	NA	0.00	0.00	0.00	0.00
2	Bad	100.00	100.00	80.00	0.00
3	Average	0.00	0.00	20.00	100.00
4	Good	0.00	0.00	0.00	0.00
<b>E. Auction arrangements</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	100.00	100.00	100.00	100.00
3	Good	0.00	0.00	0.00	0.00
<b>F. Supervision of sale</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	100.00	100.00	100.00	100.00
3	Good	0.00	0.00	0.00	0.00
<b>G. Loading facilities</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	70.00	80.00	40.00	10.00
3	Good	30.00	20.00	60.00	90.00
<b>H. Sorting facilities</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	44.00	40.00	42.00	24.00
3	Good	56.00	60.00	58.00	76.00
<b>I. Weighing facilities</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	100.00	100.00	50.00	44.00
3	Good	0.00	0.00	50.00	56.00
<b>J. Packing facilities</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	40.00	36.00	20.00	10.00
3	Good	60.00	64.00	80.00	90.00
<b>K. Internal Telephone</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	0.00	0.00	0.00	0.00
3	Good	0.00	0.00	0.00	0.00
4	NA	100.00	100.00	100.00	100.00
<b>L. Banking facilities</b>					
1	Bad	0.00	0.00	0.00	0.00



2	Average	0.00	0.00	0.00	0.00
3	Good	0.00	0.00	0.00	0.00
4	NA	100.00	100.00	100.00	100.00
<b>M. Computer facilities</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	0.00	0.00	0.00	0.00
3	Good	0.00	0.00	0.00	0.00
4	NA	100.00	100.00	100.00	100.00
<b>N. Internet facilities</b>					
1	Bad	0.00	0.00	0.00	0.00
2	Average	0.00	0.00	0.00	0.00
3	Good	0.00	0.00	0.00	0.00
4	NA	100.00	100.00	100.00	100.00

to go down and cold storage facilities , majority of the farmers opined that these facilities were very poor but other facilities such as auction arrangements, supervision of sale, loading , sorting, weighing, packing were average or good. Sample farmers for both the crops reported that they did not have any internal telephone, computer and internet facilities.

**Table 4.17**  
**Perception of the Farmer on Other Market Intermediaries, Price Spread and Constraints in Agricultural Marketing**

Sl. No.	Particulars	% to total Responses			
		Orange		Potato	
		TMC	EMC	TMC	EMC
<b>1</b>	<b>After the buyer, who are the agents and how many channels are there between you and the retail market (% to total)</b>				
<b>A</b>	<b>Agents</b>				
a	Don't know	0.00	22.00	0.00	100.00
b	Retailer	30.00	0.00	0.00	0.00
c	Commission Agent/Wholesaler/Retailer	30.00	0.00	40.00	0.00
d	Commission Agent/Wholesaler/Merchant Wholesaler /Retailer	40.00	0.00	60.00	0.00
e	SHG/Retailer	0.00	42.00	0.00	0.00
f	Processing Unit	0.00	36.00	0.00	0.00
<b>B</b>	<b>How many channels in between (% to total responses)</b>				
	1 Channel	10.00	22.00	34.00	0.00
	2 Channels	24.00	42.00	30.00	0.00
	3-4 Channels	44.00	36.00	0.00	0.00
	Don't know	22.00	0.00	36.00	100.00
<b>2</b>	<b>Which are the wholesale market in the Country where crop is sold (% to Total responses)</b>				
a	Within the State	100.00	100.00	100.00	100.00
b	Tinsukia	14.00	42.00	8.00	0.00
c	Dibrugarh	12.00	32.00	6.00	0.00
d	Sibsagar	26.00	14.00	4.00	0.00
e	Jorhat	30.00	12.00	4.00	0.00
f	Nagaon	6.00	0.00	40.00	0.00
g	Hojai/ Lanka	0.00	0.00	26.00	0.00
h	Guwahati	12.00	0.00	12.00	100.00
<b>3</b>	<b>Did you know the price at which produce is sold in the retail market (% to Total hh)</b>				
a	Unaware	28.00	0.00	0.00	35.00
b	Aware	72.00	100.00	100.00	65.00
c	If you know, what is the price (Rs/ctl)	2,000/-	2,000/-	600/-	600/-
<b>4</b>	<b>What is your opinion of margin that is realized (% to total hh)</b>				
a	Not high	20.00	100.00	75.00	0.00
b	High	80.00	0.00	25.00	0.00
c	Very high	0.00	0.00	0.00	0.00
d	Do not know	0.00	0.00	0.00	100.00

<b>5</b>	<b>In future will you sell the produce to this agent again (% to total hh)</b>				
a	No	18.00	0.00	2.00	0.00
b	Yes	22.00	100.00	62.00	100.00
c	Uncertain	16.00	0.00	12.00	0.00
d	If give higher price	44.00	0.00	24.00	0.00
<b>6</b>	<b>Any other option for selling the produce (% to total hh)</b>				
a	No	12.00	0.00	0.00	0.00
b	Yes	38.00	100.00	100.00	100.00
<b>c</b>	<b>If yes, what are the options for selling (% to total responses)</b>				
i	City Trader	0.00	0.00	0.00	0.00
ii	Export	6.00	10.00	0.00	0.00
iii	Other Market/State	20.00	36.00	0.00	0.00
iv	Govt.if given higher price	74.00	54.00	100.00	100.00

Sl. No.	Particulars	% to total Responses			
		Orange		Potato	
		TMC	EMC	TMC	EMC
<b>7</b>	<b>What are the enabling conditions and support that Government should do so that farmers can get a better price for the produce (% to total response)</b>				
a	Need Export Facility	100.00	100.00	0.00	0.00
b	Cold Storage & Higher MSP	100.00	100.00	100.00	100.00
c	Need Subsidy	0.00	0.00	0.00	0.00
d	Market and Other changes should be reduced	82.00	94.00	65.00	0.00
e	Increase MSP	100.00	100.00	100.00	100.00
f	Reduce Commission Agent	0.00	0.00	0.00	0.00
g	Other facilities	0.00	0.00	0.00	0.00
<b>8</b>	<b>What are the constraints faced by you in EMC as Compared to TMC (% to total responses)</b>				
a	No Constraints faced	-	0.00	-	0.00
b	Only buys Selected Quality produce	-	28.00	-	70.00
c	Buys only in small Quantity	-	40.00	-	18.00
d	Delay in Payment	-	0.00	-	0.00
e	EMC is not as strong as TMC	-	32.00	-	12.00
f	Other Problems	-	0.00	-	0.00
<b>9</b>	<b>How do you think the constraints in the Emerging marketing channels can be overcome ?</b>				
a	Production of quality product	-	16.00	-	26.00
b	Purchase entire produce	-	0.00	-	20.00
c	Need Attract farmers by providing facilities and services	-	38.00	-	42.00
d	Govt. should encourage the farmer for EMC	-	46.00	-	12.00
<b>10</b>	<b>Suggestions to ensure that farmers get higher price for the produce and margins of the intermediaries are reduced ?</b>				
a	Reduce intermediaries in market	10.00	0.00	16.00	0.00
b	Provide good Transport Facilities to the market	16.00	22.00	8.00	10.00
c	Provisions for Assured sale of the produced	18.00	16.00	12.00	14.00
d	Govt. should provide cold storage facilities in the market	16.00	18.00	8.00	10.00
e	Reduce Charges (Unaccounted cess collection/ Market charges)	0.00	6.00	10.00	8.00
f	Provide easy Credit facilities to the farmers	14.00	12.00	12.00	22.00
g	Export marketing network for the surplus produced	8.00	10.00	14.00	12.00
h	Establishment of more Food-processing units	18.00	16.00	20.00	24.00

Table 4.17 shows the perception of the farmer on other market intermediaries, price spread and constraints in agricultural marketing. From the table it was observed that 100.00 per

cent of the sample respondents reported that the entire produce was sold within the state. The main constraints faced by the EMC sample farmers for both the crops were the quality, smaller quantity of the produce purchased by the buyers and lastly, the EMC was not as strong as TMC. Main suggestions offered by the sample farmers to ensure higher price for the produce and to reduce the margins of the intermediaries were reduction of intermediaries in the market, providing good transport facilities to the market, provisions for assured sale of the produced, creating cold storage facilities in the market, easy credit facilities to the farmers, export marketing network for the surplus produced and establishment of more food-processing units.

#### 4.12 Price Spread

The price spread refers to the difference between the price received by the producers and the price paid by the consumers. It was observed that there were wide variations of price received by the growers and the price paid by the ultimate consumer. The market functionaries are to perform a number of functions which involve a variety of costs in assembling the marketable produce from large number of growers scattered over a wide area. The secondary services like grading, packaging, transportation, storage, handling, labour charges and market charges etc. are also substantial. The various costs involved in different levels of market functionaries and commission of the traders inflated the consumer's price. Thus, a major share of consumer's rupee was enjoyed by the different levels of market functionaries and a considerable part was involved in the form of various services and marketing costs.

For estimation of the price spread, we have taken the average price and all the expenditure of the market for both the crops within the sample districts.

##### 4.12.1 Price Spread of Orange (TMC)

The price spread analysis of orange (TMC) in Channel-I was worked out and presented in Table- 4.18. It was seen from the table that the producer's share in

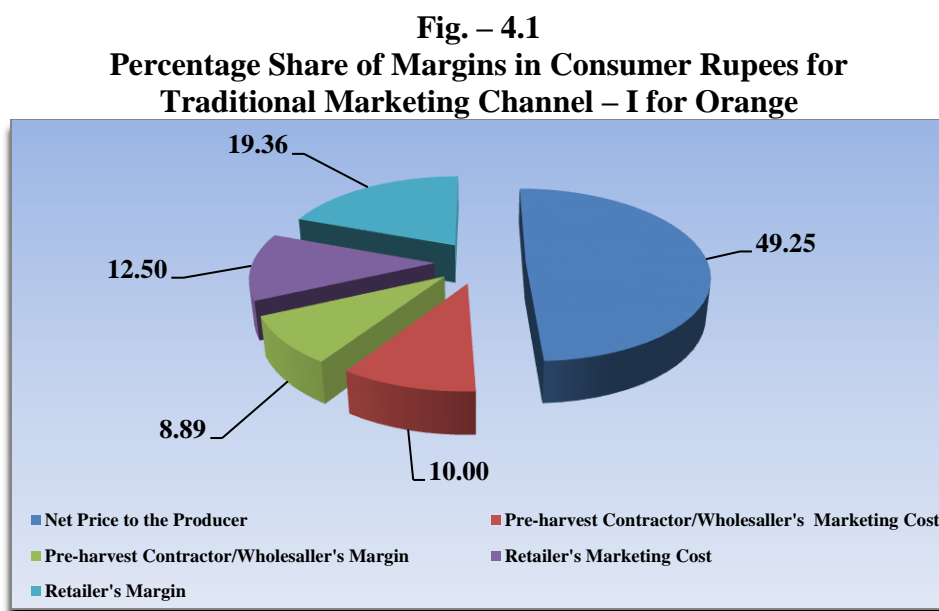
**Table – 4.18**  
**Price Spread of Orange in Traditional Marketing Channel – I**  
(Channel I: Producer - Pre-harvest Contractor/Wholesaler - Retailer - Consumer)

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	Net Price to the Producer (Pre-harvest Contractor/Wholesaler's purchase price)	985.00	985.00	49.25
2	Pre-harvest Contractor/Wholesaler's Marketing Cost	200.00	200.00	10.00
	Labour Charge (loading & Unloading)	40.00	40	2.00
	Transportation Cost	124.00	124	6.20
	Weighting Cost	5.00	5	0.25

	Market Fees (parking etc.)	10.00	10	0.50
	Development Cess @1%	9.85	9.85	0.49
	Wastage	11.15	11.15	0.56
3	<b>Pre-harvest Contractor/Wholesaler's Selling Price.</b> (i.e. Retailer's purchase price)	<b>1362.75</b>	<b>177.75</b>	<b>8.89</b>
4	<b>Retailer's Marketing Cost</b>	<b>250.00</b>	<b>250.00</b>	<b>12.50</b>
	Transportation Cost	92.50	92.50	4.63
	Labour Charge(handling,Grading, Stacking)	57.50	57.50	2.88
	Market Fees	30.00	30.00	1.50
	Wastage	45.00	45.00	2.25
	Other marketing expenses	25.00	25.00	1.25
5	<b>Retailer's Selling Price</b> (i.e. Consumer's purchase price)	<b>2000.00</b>	<b>387.25</b>	<b>19.36</b>
<b>Total</b>			<b>2000.00</b>	<b>100.00</b>

consumer's rupee was 49.25 per cent. Excluding the marketing cost, pre-harvest contractor/wholesaler's share in consumer's rupee was 8.89 per cent and retailer's share in consumer's rupee was 19.36 per cent.

Fig.4.1 shows the percentage share of margins in consumer rupees for traditional marketing channel – I for orange



**Table – 4.19**  
**Price Spread of Orange in Traditional Marketing Channel - II**  
(Channel II: Producer - Commission Agent - Wholesaler - Retailer – Consumer)

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	<b>Net Price to the Producer</b> (i.e. Commission Agent's purchase price)	<b>945.00</b>	<b>945.00</b>	<b>47.25</b>
2	<b>Commission Agent's Marketing Cost</b>	<b>150.00</b>	<b>150.00</b>	<b>7.50</b>
	Labour Charge (loading & Unloading)	40.00	40.00	2.00
	Transportation Cost	80.00	80.00	4.00
	Market Fees (parking etc.)	10.00	10.00	0.50

	Development Cess @1%	9.45	9.45	0.47
	Wastage	10.55	10.55	0.53
<b>3</b>	<b>Commission Agent's Selling Price. (i.e. Wholesaler's purchase price)</b>	<b>1230.00</b>	<b>135.00</b>	<b>6.75</b>
<b>4</b>	<b>Wholesaler's Marketing Cost</b>	<b>125.00</b>	<b>125.00</b>	<b>6.25</b>
	Labour Charge (loading & Unloading)	40.00	40.00	2.00
	Transportation Cost	56.25	56.25	2.81
	Market Fees (Packaging, parking etc.,)	10.00	10.00	0.50
	Wastage	18.75	18.75	0.94
<b>5</b>	<b>Wholesaler's Selling Price. (i.e. Retailer's purchase price)</b>	<b>1475.00</b>	<b>120.00</b>	<b>6.00</b>
<b>6</b>	<b>Retailer's Marketing Cost</b>	<b>175.00</b>	<b>175.00</b>	<b>8.75</b>
	Transportation Cost	45.00	45.00	2.25
	Labour Charge(handling, Grading, Stacking)	40.00	40.00	2.00
	Market Fees	30.00	30.00	1.50
	Wastage	35.00	35.00	1.75
	Other marketing expenses	25.00	25.00	1.25
<b>7</b>	<b>Retailer's Selling Price (i.e. Consumer's purchase price)</b>	<b>2000.00</b>	<b>350.00</b>	<b>17.50</b>
<b>Total</b>			<b>2000.00</b>	<b>100.00</b>

The price spread analysis of orange (TMC) in Channel-II was worked out and presented in Table-4.19. It was seen from the Table that the producer's share in consumer's rupee was 47.25 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 6.75 per cent, wholesaler's share in consumer's rupee was 6.00 per cent and retailer's share in consumer's rupee was 17.50 per cent.

**Fig. – 4.2**  
**Percentage Share of Margins in Consumer Rupees for**  
**Traditional Marketing Channel – II for Orange**

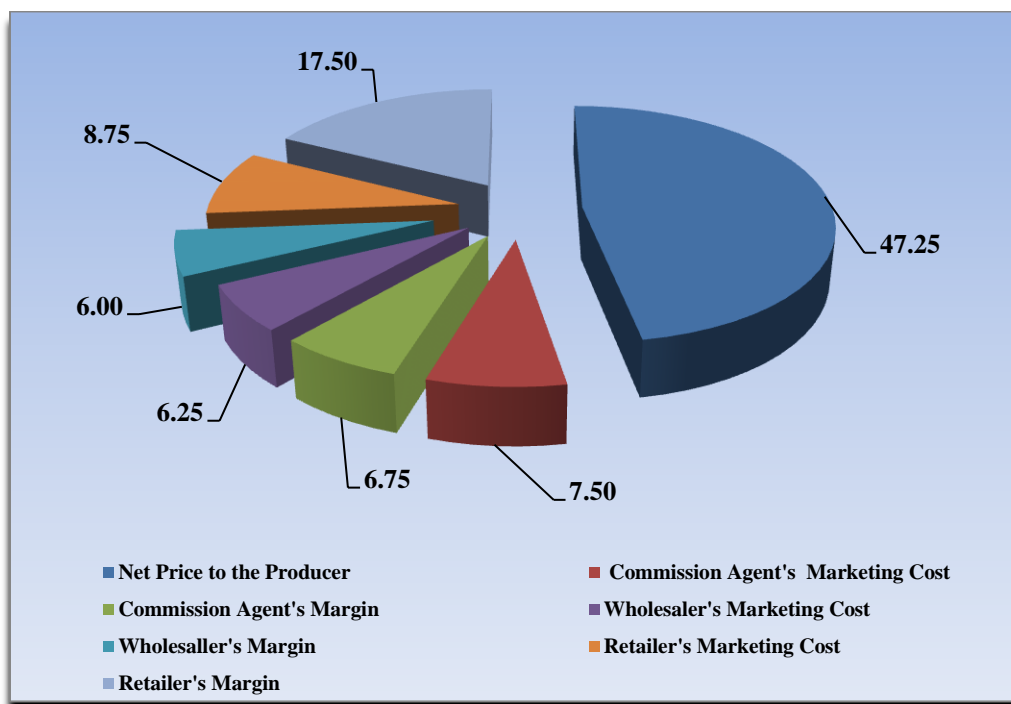


Fig.4.2 shows the percentage share of margins in consumer rupees for traditional marketing channel – II for orange.

The price spread of orange (TMC) in Channel-III was worked out and presented in Table- 4.20. It was seen from the Table that the producer's share in consumer's rupee was 43.75 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 5.75 per cent, merchant wholesaler's share in consumer's rupee was 4.25 per cent, wholesaler's share in consumer's rupee was 5.50 per cent and retailer's share in consumer's rupee was 15.75 per cent.

**Table – 4.20**  
**Price Spread of Orange in Traditional Marketing Channel – III**  
(Channel III: Producer - Commission Agent - Merchant Wholesaler - Wholesaler - Retailer – Consumer)

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	<b>Net Price to the Producer (Pre-harvest Contractor/Wholesaller's purchase price)</b>	<b>875.00</b>	<b>875.00</b>	<b>43.75</b>
2	<b>Pre-harvest Contractor/Wholesaller's Marketing Cost</b>	<b>150.00</b>	<b>150.00</b>	<b>7.50</b>
	Labour Charge (loading & Unloading)	40.00	40.00	2.00
	Transportation Cost	80.50	80.50	4.03
	Weighting Cost	5.00	5.00	0.25
	Market Fees (parking etc.)	10.00	10.00	0.50
	Development Cess @1%	8.75	8.75	0.44
	Wastage	10.75	10.75	0.54
3	<b>Pre-harvest Contractor/Wholesaller's Selling Price. (i.e. Merchant wholeseller's purchase price)</b>	<b>1140.00</b>	<b>115.00</b>	<b>5.75</b>
2	<b>Merchant wholesaller's Marketing Cost</b>	<b>80.00</b>	<b>80.00</b>	<b>4.00</b>
	Labour Charge (loading & Unloading)	25.00	25.00	1.25
	Transportation Cost	30.00	30.00	1.50
	Market Fees (parking etc.)	10.00	10.00	0.50
	Wastage	15.00	15.00	0.75
4	<b>Merchant wholesaller's Selling Price. (i.e. Wholeseller's purchase price)</b>	<b>1305.00</b>	<b>85.00</b>	<b>4.25</b>
5	<b>Wholeseller's Marketing Cost</b>	<b>145.00</b>	<b>145.00</b>	<b>7.25</b>
	Labour Charge (loading & Unloading)	40.00	40.00	2.00
	Transportation Cost	75.00	75.00	3.75
	Market Fees (parking etc.)	10.00	10.00	0.50
	Wastage	20.00	20.00	1.00
6	<b>Wholesaller's Selling Price. (i.e. Retailer's purchase price)</b>	<b>1560.00</b>	<b>110.00</b>	<b>5.50</b>
7	<b>Retailer's Marketing Cost</b>	<b>125.00</b>	<b>125.00</b>	<b>6.25</b>
	Transportation Cost	15.00	15	0.75
	Labour Charge(handling, Grading, Stacking)	25.00	25	1.25
	Market Fees	30.00	30	1.50
	Wastage	35.00	35	1.75
	Other marketing expenses	20.00	20	1.00
8	<b>Retailer's Selling Price</b>	<b>2000.00</b>	<b>315.00</b>	<b>15.75</b>

	(i.e. Consumer's purchase price)		
<b>Total</b>		<b>2000.00</b>	<b>100.00</b>

**Fig. – 4.3**  
**Percentage Share of Margins in Consumer Rupees for**  
**Traditional Marketing Channel – III for Orange**

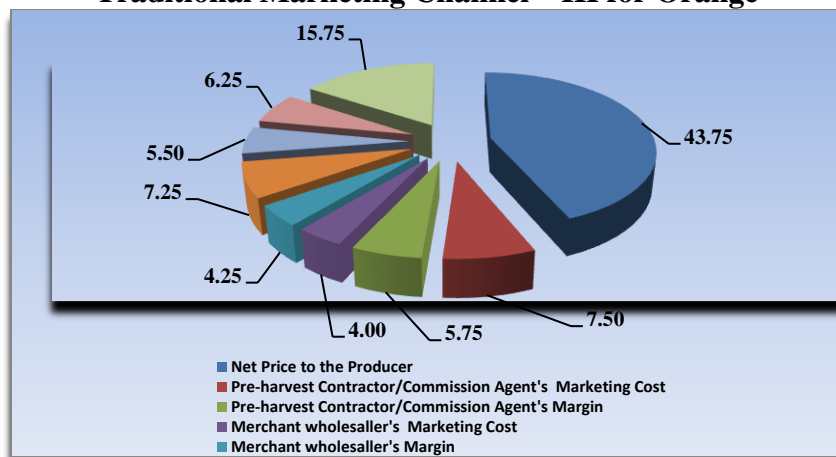


Fig.4.3 shows the percentage share of margins in consumer rupees for traditional marketing channel – III for orange.

#### 4.12.2 Price Spread of Orange (EMC)

The price spread of orange (EMC) in Channel-1 was worked out and presented in Table-4.21. It was seen from the Table that the producer's share in consumer's rupee was 82.25 per cent and producer's marketing cost share in consumer's rupee was 17.75 per cent.

**Table – 4.21**  
**Price Spread of Orange in Emerging Marketing Channel - I**  
**(Channel I: Producer – Consumer)**

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	<b>Net Price to the Producer</b>	<b>1645.00</b>	<b>1645.00</b>	<b>82.25</b>
2	<b>Producer's Marketing Cost</b>	<b>355.00</b>	<b>355.00</b>	<b>17.75</b>
	Labour Charge (loading & Unloading)	88.50	88.50	4.43
	Transportation Cost	147.25	147.25	7.36
	Weighting Cost	5.00	5.00	0.25
	Market Fees	35.00	35.00	1.75
	Development Cess @1%	16.45	16.45	0.82
	Wastage	32.80	32.80	1.64
	Other marketing expenses	30.00	30.00	1.50

3	Producer's Selling Price (Consumer's purchase price)	2000.00	-	-
<b>Total</b>			<b>2000.00</b>	<b>100.00</b>

**Fig. – 4.4**  
**Percentage Share of Margins in Consumer Rupees for**  
**Emerging Marketing Channel – I (Orange)**

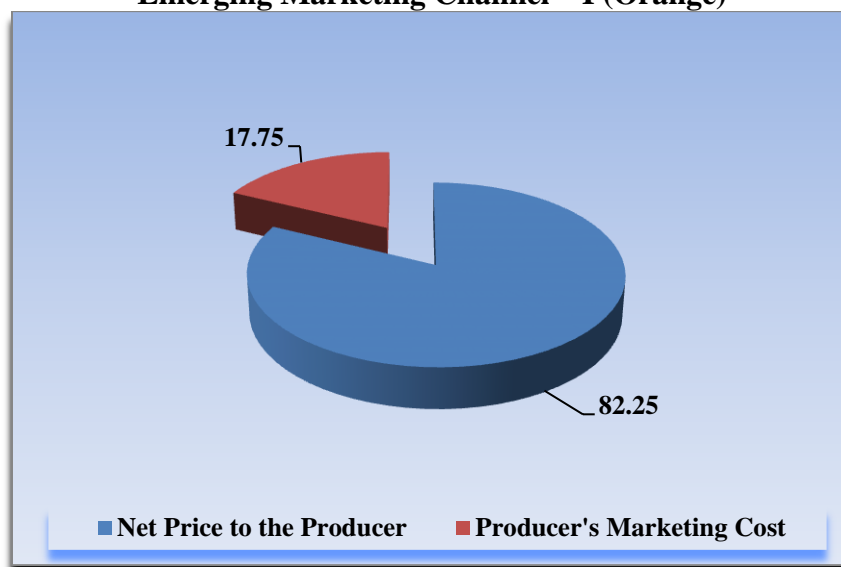


Fig.4.4 shows the percentage share of margins in consumer rupees for emerging marketing channel – I for orange .

The price spread of orange (EMC) in Channel-II was worked out and presented in Table- 4.22. It was seen from the Table that the producer's share in consumer's rupee was 67.50 per cent and SHG's marketing cost share in consumer's rupee was 16.40 per cent. SHG's share in consumer's rupee was 16.00 per cent.

**Table – 4.22**  
**Price Spread of Orange in Emerging Marketing Channel - II**  
**(Channel II: Producer - Self Help Group – Consumer)**

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	<b>Net Price to the Producer (SHG's purchase price)</b>	<b>1350.00</b>	<b>1350.00</b>	<b>67.50</b>
2	<b>SHG's (Farmer's) Marketing Cost</b>	<b>328.00</b>	<b>328.00</b>	<b>16.40</b>
	Labour Charge (loading & Unloading)	79.35	79.35	3.97
	Transportation Cost	135.45	135.45	6.77
	Weighting Cost	5.00	5.00	0.25
	Market Fees	35.00	35.00	1.75
	Development Cess @1%	13.50	13.50	0.68
	Wastage	29.70	29.70	1.49
	Other marketing expenses	30.00	30.00	1.50
4	<b>SHG's Selling Price</b>	<b>2000.00</b>	<b>322.00</b>	<b>16.10</b>



	(Consumer's purchase price)		
<b>Total</b>		<b>2000.00</b>	<b>100.00</b>

**Fig. – 4.5**

**Percentage Share of Margins in Consumer Rupees for Emerging Marketing Channel – II (Orange)**

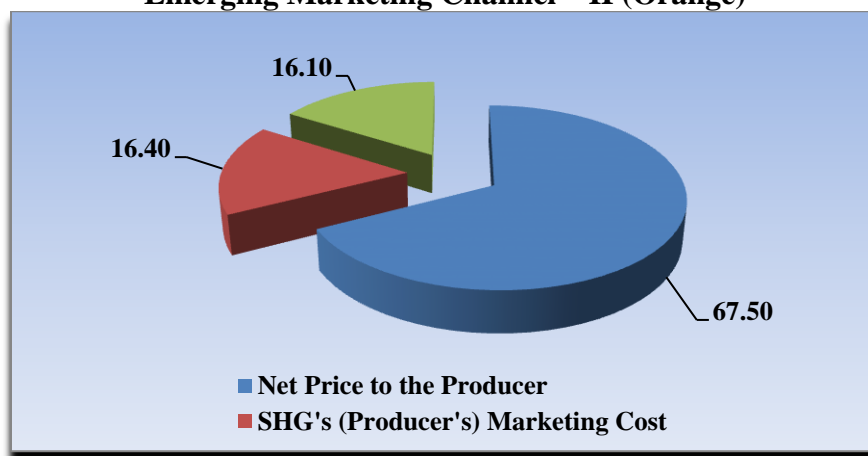


Fig.4.5 shows the percentage share of margins in consumer rupees for emerging marketing channel – II for orange.

**4.12.3 Price Spread of Potato (TMC)**

The price spread of potato (TMC) in Channel-I was worked out and presented in Table-4.23. It was seen from the Table that the producer's share in consumer's rupee was 70.50 per cent. Excluding the marketing cost, retailer's share in consumer's rupee was 12.83 per cent.

**Table- 4.23**  
**Price Spread of Potato in Traditional Marketing Channel - I**  
(Channel I: Producer - Retailer - Consumer)

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
<b>1</b>	<b>Net Price to the Producer (Retailer's purchase price)</b>	<b>423.00</b>	<b>423.00</b>	<b>70.50</b>
<b>2</b>	<b>Producer's Marketing Cost</b>	<b>53.00</b>	<b>53.00</b>	<b>8.83</b>
	Labour Charge (loading & Unloading)	10.00	10.00	1.67
	Transportation Cost	25.00	25.00	4.17
	Development Cess @1%	4.23	4.23	0.71
	Weighting Cost	5.00	5.00	0.83
	Market Fees	2.00	2.00	0.33
	Wastage	6.77	6.77	1.13
<b>3</b>	<b>Retailer's purchase price (Producer's Selling Price)</b>	<b>476.00</b>	<b>-</b>	<b>-</b>
<b>4</b>	<b>Retailer's Marketing Cost</b>	<b>47.00</b>	<b>47.00</b>	<b>7.83</b>
	Labour Charge (loading & Unloading)	10.00	10.00	1.67
	Transportation Cost	15.00	15.00	2.50
	Storage Cost	5.00	5.00	0.83
	Market Fees	2.00	2.00	0.33
	Wastage	10.50	10.50	1.75

	Other marketing expenses	4.50	4.50	0.75
5	<b>Retailer's Selling Price</b> (i.e. Consumer's purchase price)	<b>600.00</b>	<b>77.00</b>	<b>12.83</b>
<b>Total</b>			<b>600.00</b>	<b>100.00</b>

**Fig. – 4.6**  
**Percentage Share of Margins in Consumer Rupees for**  
**Traditional Marketing Channel – I for Potato**

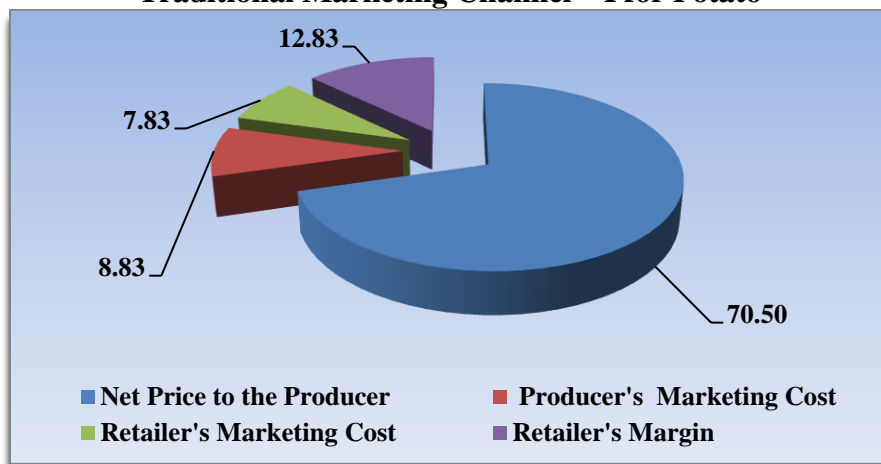


Fig.4.6 shows the percentage share of margins in consumer rupees for traditional marketing channel – I for potato.

The price spread of potato (TMC) in Channel-II was worked out and presented in Table- 4.24. It was seen from the Table that the producer's share in consumer's rupee was 62.50 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 9.17 per cent, wholesaler's share in consumer's rupee was 5.83 per cent and retailer's share in consumer's rupee was 8.33 per cent.

**Table- 4.24**  
**Price Spread of Potato in Traditional Marketing Channel - II**  
(Channel II: Producer - Commission Agent - Wholesaler - Retailer – Consumer)

Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	<b>Net Price to the Producer</b> (i.e. Commission Agent's purchase price)	<b>375.00</b>	<b>375.00</b>	<b>62.50</b>
2	<b>Commission Agent's Marketing Cost</b>	<b>20.00</b>	<b>20.00</b>	<b>3.33</b>
	Weighting Cost	5.00	5.00	0.83
	Storage Cost	4.20	4.20	0.70
	Wastage	3.50	3.50	0.58
	Miscellaneous Expenditure (bag etc.)	7.30	7.30	1.22
3	<b>Commission Agent's Selling Price.</b> (i.e. Wholesaler's purchase price)	<b>450.00</b>	<b>55.00</b>	<b>9.17</b>
4	<b>Wholesaler's Marketing Cost</b>	<b>25.00</b>	<b>25.00</b>	<b>4.17</b>

	Labour Charge (loading & Unloading)	3.00	3.00	0.50
	Transportation Cost	4.20	4.20	0.70
	Weighting Cost	5.00	5.00	0.83
	Storage Cost	2.50	2.50	0.42
	Market Fees	3.00	3.00	0.50
	Wastage	7.30	7.30	1.22
<b>5</b>	<b>Wholesaler's Selling Price. (i.e. Retailer's purchase price)</b>	<b>510.00</b>	<b>35.00</b>	<b>5.83</b>
<b>6</b>	<b>Retailer's Marketing Cost</b>	<b>40.00</b>	<b>40.00</b>	<b>6.67</b>
	Labour Charge (loading & Unloading)	3.00	3.00	0.50
	Transportation Cost	10.00	10.00	1.67
	Storage Cost	5.50	5.50	0.92
	Market Fees	5.00	5.00	0.83
	Wastage	12.00	12.00	2.00
	Other marketing expenses	4.50	4.50	0.75
<b>7</b>	<b>Retailer's Selling Price (i.e. Consumer's purchase price)</b>	<b>600.00</b>	<b>50.00</b>	<b>8.33</b>
<b>Total</b>			<b>600.00</b>	<b>100.00</b>

**Fig. – 4.7**  
**Percentage Share of Margins in Consumer Rupees for Traditional Marketing Channel – II for Potato**

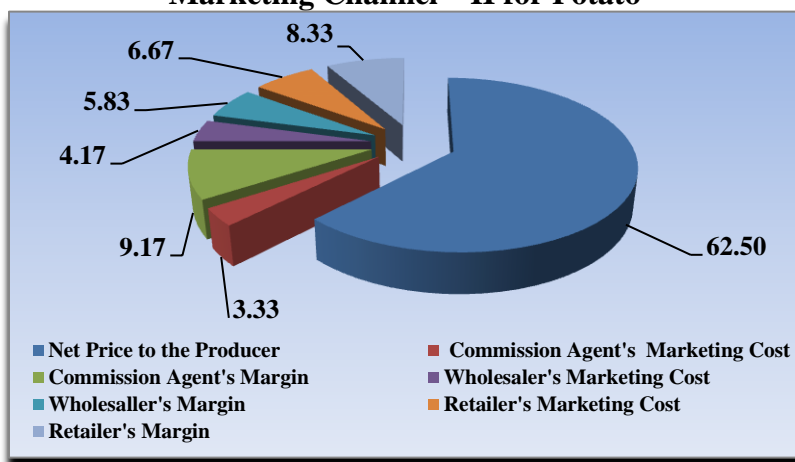


Fig.4.7 shows the percentage share of margins in consumer rupees for traditional marketing channel – II for potato

The price spread of orange (TMC) in Channel-III was worked out and presented in Table-4.25. It was seen from the Table that the producer's share in consumer's rupee was 54.17 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 5.00 per cent, merchant wholesaler's share in consumer's rupee was 3.33 per cent, wholesaler's share in consumer's rupee was 7.50 per cent and retailer's share in consumer's rupee was 14.17 per cent.

**Table- 4.25**  
**Price Spread of Potato in Traditional Marketing Channel – III**

(Channel III: Producer - Commission Agent - Merchant Wholesaler - Wholesaler - Retailer – Consumer)

Sl.	Items of Cost and	Average Price	Margin at	Percentage
-----	-------------------	---------------	-----------	------------

No.	Market Functionaries	(Rs. Per Qtl.)	different level	Share
1	<b>Net Price to the Producer (Pre-harvest Contractor/Wholesaller's purchase price)</b>	<b>325.00</b>	<b>325.00</b>	<b>54.17</b>
2	<b>Pre-harvest Contractor/Wholesaller's Marketing Cost</b>	<b>20.00</b>	<b>20.00</b>	<b>3.33</b>
	Labour Charge (loading & Unloading)	2.00	2.00	0.33
	Transportation Cost	4.00	4.00	0.67
	Development Cess @1%	3.25	3.25	0.54
	Weighting Cost	5.00	5.00	0.83
	Storage Cost	2.50	2.50	0.42
	Market Fees	2.00	2.00	0.33
	Wastage	1.25	1.25	0.21
3	<b>Pre-harvest Contractor/Wholesaller's Selling Price. (i.e. Marchent wholeseller's purchase price)</b>	<b>375.00</b>	<b>30.00</b>	<b>5.00</b>
2	<b>Merchant wholesaller's Marketing Cost</b>	<b>20.00</b>	<b>20.00</b>	<b>3.33</b>
	Labour Charge (loading & Unloading)	2.00	2.00	0.33
	Transportation Cost	4.00	4.00	0.67
	Weighting Cost	5.00	5.00	0.83
	Storage Cost	2.50	2.50	0.42
	Market Fees	2.00	2.00	0.33
	Wastage	4.50	4.50	0.75
4	<b>Merchant wholesaller's Selling Price. (i.e. Wholeseller's purchase price)</b>	<b>415.00</b>	<b>20.00</b>	<b>3.33</b>
5	<b>Wholeseller's Marketing Cost</b>	<b>15.00</b>	<b>15.00</b>	<b>2.50</b>
	Labour Charge (loading & Unloading)	2.00	2.00	0.33
	Transportation Cost	3.00	3.00	0.50
	Storage Cost	2.00	2.00	0.33
	Market Fees	2.00	2.00	0.33
	Wastage	6.00	6.00	1.00
6	<b>Wholeseller's Selling Price. (i.e. Retailer's purchase price)</b>	<b>475.00</b>	<b>45.00</b>	<b>7.50</b>
7	<b>Retailer's Marketing Cost</b>	<b>40.00</b>	<b>40.00</b>	<b>6.67</b>
	Labour Charge (loading & Unloading)	3.00	3.00	0.50
	Transportation Cost	10.00	10.00	1.67
	Storage Cost	5.00	5.00	0.83
	Market Fees	5.00	5.00	0.83
	Wastage	12.50	12.50	2.08
	Other marketing expenses	4.50	4.50	0.75
8	<b>Retailer's Selling Price (i.e. Consumer's purchase price)</b>	<b>600.00</b>	<b>85.00</b>	<b>14.17</b>
<b>Total</b>			<b>600.00</b>	<b>100.00</b>

**Fig. – 4.8**  
**Percentage Share of Margins in Consumer Rupees for**  
**Traditional Marketing Channel – III for Potato**

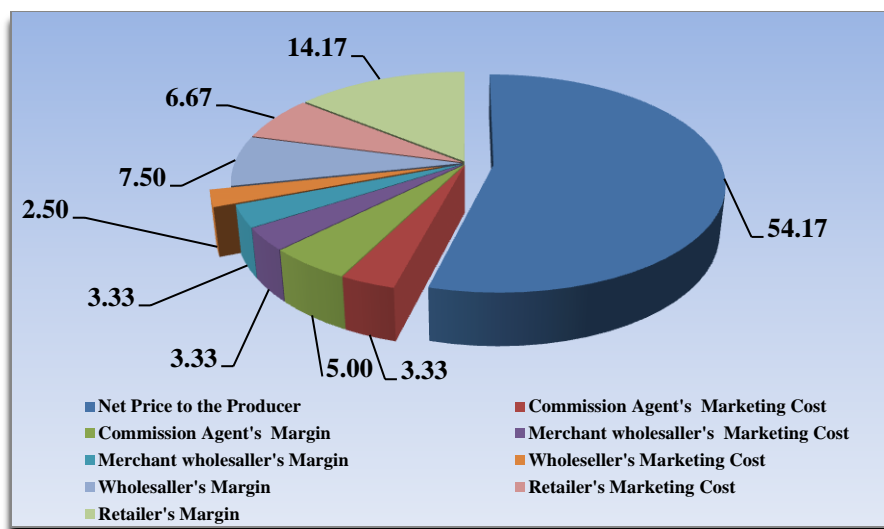


Fig.4.8 shows the percentage share of margins in consumer rupees for traditional marketing channel – III for potato.

#### 4.12.4 Price Spread of Potato (EMC)

The price spread of potato for Channel-I in EMC was worked out and presented in Table- 4.26. It was seen from the Table that the producer's share in consumer's rupee was 90.91 per cent and producer's marketing cost share in consumer's rupee was 9.09 per cent.

**Table – 4.26**  
**Price Spread of Potato in Emerging Marketing Channel - I**  
(Channel I: Producer – Consumer)

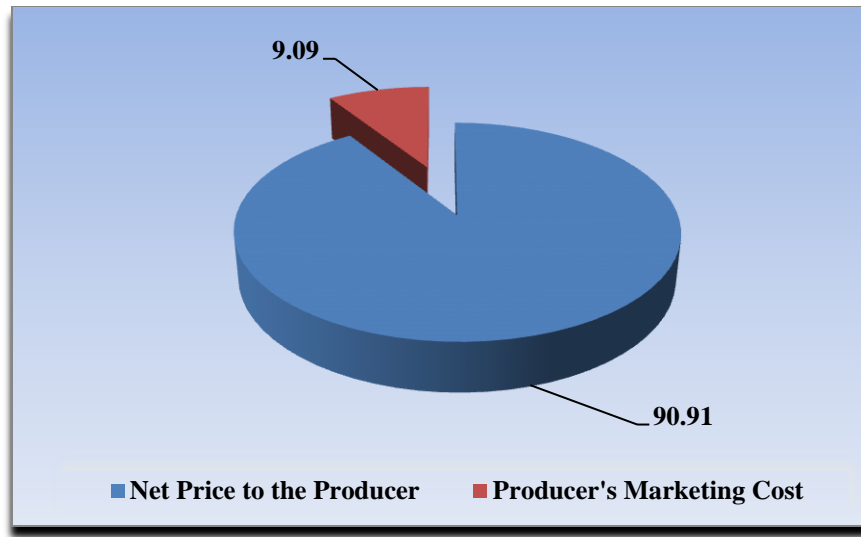
Sl. No.	Items of Cost and Market Functionaries	Average Price (Rs. Per Qtl.)	Margin at different level	Percentage Share
1	<b>Net Price to the Producer</b>	<b>545.47</b>	<b>545.47</b>	<b>90.91</b>
2	<b>Farmer's Marketing Cost</b>	<b>54.53</b>	<b>54.53</b>	<b>9.09</b>
	Labour Charge (loading & Unloading)	9.25	9.25	1.54
	Transportation Cost	9.00	9.00	1.50
	Weighting Cost	5.00	5.00	0.83
	Storage Cost	14.25	14.25	2.38
	Market Fees	2.00	2.00	0.33
	Development Cess @1%	5.45	5.45	0.91
	Wastage	5.23	5.23	0.87
	Other marketing expenses	4.35	4.35	0.73
3	<b>Producer's Selling Price (Consumer's purchase price)</b>	<b>600.00</b>	-	-
<b>Total</b>			<b>600.00</b>	<b>100.00</b>

It may be noted that the price spread for the channel-II for EMC in potato could not be worked out as the consumer received the multiple processed product after value addition.

Fig.4.9 shows the percentage share of margins in consumer rupees for emerging marketing channel – II for potato.

**Fig. – 4.9**  
**Percentage Share of Margins in Consumer Rupees for**

### Emerging Marketing Channel – II for Potato



From the analysis of the price spread, it was noticed that there was a wide gap between the prices received by the farmer and the prices paid by the consumer in TMC. In TMC for both the crops, the marketing channels were found to be circuitous and involved a large number of handlings, which resulted into increased costs and fluctuation of prices from market to market for the same quality of produce. It was further observed that with respect to price spread analysis in EMC for both the crops, farmer's share in consumer's rupee was more than TMC. It is because of less involvement of market intermediaries, which reduces the marketing costs.

#### 4.13 Market Efficiency

The market efficiency simply states that if the price received by the farmer is higher, then the marketing efficiency also becomes higher. It has already been noted in Chapter-I that the Modified Measure of Marketing Efficiency (MME) (Acharya's approach) was calculated by using the formula:  $MME = FP / (MC + MM)$ , where FP is price received by farmer, MC and MM are marketing costs and marketing margins, respectively.

Table- 4.27 shows the estimated modified measure of market efficiency (MME). Table shows that modified measure of market efficiency for orange in TMC was found at 0.97 for channel-I, 0.90 for channel-II and 0.78 for channel-III while for EMC, it was found at 4.63 for channel-I and 2.08 for channel-II.

**Table-4.27**  
**Estimated Modified Measure of Market Efficiency (MME)**

Sl. No.	Particulars	MME			
		Orange		Potato	
		TMC	EMC	TMC	EMC
1	Channel - I	0.97	4.63	2.39	10.00
2	Channel - II	0.90	2.08	1.67	-
3	Channel - III	0.78	-	1.18	

For potato, the modified measure of market efficiency in TMC was found at 2.39 for channel-I, 1.67 for channel-II and 1.18 for channel-III while for EMC, it was found at 10.00 for channel-I. It may be mentioned here that in EMC for orange in channel-III and potato in Channel-II the modified market efficiencies could not be worked out as the consumer purchased the multiple processed (value added) products of the same crop.

From the analysis of field level data and observation, it may be concluded that farmers enjoyed better margin through EMC marketing for both the crops than marketing through TMC.

\*\*\*\*\*

## **CHAPTER -V**

### **SUMMARY, CONCLUSION AND POLICY IMPLICATIONS**

#### **5.1 Backdrop**

Agricultural market reforms have been introduced in India since the Eight Five Year Plan (1992-97). As the Government needs to depend more on market forces for price stabilization and regulation, planning is now indicative more on private sector as it has a greater role to play. Normally, the market mechanism favours the richer section of the society and the poor growers are always remain at the receiving end. Hence, under new mechanism, provisions have been made to make the markets friendly towards the growers by fixing the minimum support prices. Or else, the efficiency of production, skill formation, adoption of technology and generation of marketable surplus get adversely affected. It has to be accepted that no mechanism in the market can equally distribute the fruits of development to all parts of the country at a time.

Over the years, the Government of India set up several Committees and Expert Groups to suggest the direction of reforms in the field of agricultural marketing. The first was in the line was Expert Group on Agricultural Marketing (Acharya) constituted by the Union Ministry of Rural Development in 1998. Following the constitution of this Expert Group, a major structural change occurred leading to the transfer of agricultural marketing division of Union Government from the Ministry of Rural Development to the Ministry of Agriculture. In December 2000, the Union Ministry of Agriculture constituted an Expert Committee on Strengthening and Developing Agricultural Marketing System in the Country under the chairmanship of Sri Shakneral Guru. This Committee (Guru Committee) reviewed the entire system of agricultural marketing in the country and submitted its specific recommendations to the Government in June 2001. The Expert Committee's recommendations include various legislative reforms as well as reorientation of policies and programmes (Government of India, 2001).

In India, with growing distortions in the supply chain for agricultural commodities, there is need for greater efficiency in the supply chain. The emerging marketing channels are supposed to reduce the transaction costs and ensure that the high margins that certain intermediary agents get in the regular marketing channels is reduced. Some of the emerging



channels include group-marketing, e-trading, direct marketing, contract farming, modern terminal markets, future trading, ITC Choupal, self help groups and NGOs in the marketing chain.

Agricultural marketing functions are considered as the main planks of economic development in a state like Assam. An efficient marketing system is indispensable for the success of the agricultural production programme, which is launched in recent years. Marketing is an important link in the chain of production activities of agriculture sector. Organised marketing therefore, is a precondition to sustain production programme, more particularly, in respect of horticultural production. Marketing of horticultural crops in Assam is largely unorganized and predominantly in the hands of intermediaries such as retail traders, wholesalers, the pre harvest contractors and others.

At present, the area under horticultural crops in Assam is 5.40 lakh hectares, which is 14 per cent of the net cropped area of the State. This sector annually produces 14.02 lakh MT of fruits, 39.16 lakh MT of vegetables, 2.18 lakh MT of spices besides nut crops, flowers and medicinal & aromatic plants (Economic Survey 2009-10. Govt. of Assam). The state is surplus as regards to fruits, vegetables and spices production. The important fruit crops grown include orange, pineapple, banana, lime lemon, jackfruits, guava, litchi, mango etc and more than 10 minor fruits. In case of vegetables, mention may be made of potato, various cole crops and brinjal. Major spices grown are chilly, coriander, black pepper, ginger and turmeric. In spite of all these potentialities, horticulture sector is still in an infant stage.

It is expected that the study, once accomplished, will be useful to assess the efficacy of the emerging marketing channels vis-à-vis regular marketing channels in Assam.

## **5.2 Objectives of the Study:**

The study is proposed with the following main objectives:

- v) To estimate the share of the farmer in the consumer rupee in emerging marketing models *vis-à-vis* the traditional marketing channels.
- vi) To estimate the degree of market efficiency and incidence of post harvest losses in emerging marketing channels *vis-à-vis* traditional channels.
- vii) To study the superior market practices and services provided by different agencies in the emerging marketing channels *vis-à-vis* traditional marketing channels.

- viii) To study the constraints faced by the farmers and different market functionaries in the emerging marketing channels *vis-à-vis* traditional marketing channels.

### 5.3 Methodology for the study and Data

The study is based on both primary and secondary data and the methodology of the study is as follows:

#### 5.3.1 Primary Data Survey:

The data has been collected by using specially designed interview schedules and questionnaires supplied by the coordinating centre (Institute of Economic Growth, Delhi) for the project involving

- (6) Farmers
- (7) Buyers
- (8) Retailers and
- (9) Consumers

The sample sizes for the survey (as per the coordinating centre) are presented in Table -5.1

**Table-5.1**  
**Respondent wise sample sizes of the survey**

Respondents	Crop 1(Orange)		Crop 2 (Potato)	
	Traditional Marketing Channel	Emerging Marketing Channel	Traditional Marketing Channel	Emerging Marketing Channel
(1) Farmers	50	50	50	50
(2) Buyers	5	5	5	1
(3) Retailers	5	-	5	-
(4) Consumers	15	15	15	15

A focused group discussion with the members (5 nos.) of the market committees was also conducted in order to get a clear picture of market charges, market practices and market infrastructures.

The Modified Measure of Marketing Efficiency (MME) (Acharya's approach) was calculated using the formula:  $MME = FP / (MC + MM)$ , where FP is the price received by farmer, MC and MM are marketing costs and marketing margins, respectively.

#### 5.3.2 Secondary Data Sources:

The secondary data are collected from various sources including National Informatics Centre, and other State/District level published Government sources for the chosen districts viz.- Tinsukia and Nagaon of Assam. The State Marketing Act, By-laws and Regulations of State Marketing Board were accessed; analyzed & inferences were drawn accordingly,

The study is expected to fill an important gap and throw new light into the problems of orange and potato cultivation in the state especially, in finding marketing & its policy implications. The approach pleads for making an operational plan to promote agricultural development in general and orange & potato cultivation in particular along with efficient marketing. To translate this policy into a programme of action requires resource mobilization, infrastructure development, people's awareness & supportive/administrative services. The implementation of the provisions of APMC Act is at infant stage in Assam. As compared to other advanced states of India, Assam is yet to reap the benefits of emerging market. However, an attempt has been made in this report to highlight the existing emerging marketing channels *vis-a-vis* traditional marketing channels in the State.

#### **5.4 Comparison between TMC and EMC**

The marketing system is defined to be traditional where a large number of intermediaries are involved and the share to the producer is comparatively lower. The role of these intermediaries in agricultural marketing is to consolidate the produce at the village markets and reconsolidate again at least two or three times before it reaches to the final consumer. As a result, the supply chain in the traditional marketing system becomes long and is completely dominated by those traders who operate on high margins without much value addition.

The purpose of state regulation of agricultural markets was to protect farmers from the exploitation of intermediaries and traders and also to ensure better prices and timely payment for their produce. Regulated markets in Assam, however, have not attained much success even after introduction of the system way back in 1977. Lack of adequate infrastructure facilities, ignorance of farmers about these markets, lack of proper market information, lack of grading and storage facilities are some of the problems often associated with the regulated market system in the state. Another problem associated with the system is the tendency of these markets to acquire the status of restrictive and monopolistic markets, providing no help in direct and free marketing, organized retailing and smooth raw material supplies to agro industries. Exporters, processors and retail chain operators cannot procure directly from the farmers as the produce is required to

be channelized through regulated markets and licensed traders. There is, in the process, an enormous increase in the cost of marketing and farmers end up by getting a low price for their produce. Monopolistic practices and modalities of the state-controlled markets have also prevented private investment in the agricultural marketing sector.

Now the scenario of agricultural marketing is changing gradually because of the changes made in the APMC act and the emerging marketing concepts like direct marketing, contract farming, corporate entry etc. have begun to be popular amongst the farming communities.

Direct marketing is an innovative concept of emerging marketing system, which involves marketing of produce by the farmer directly to the consumers/millers without any intermediaries. Direct marketing enables producers and other bulk buyers to economize on transportation cost and improve price realization. It also provides incentive to large-scale marketing companies and exporters to purchase directly from producing areas. Direct marketing by farmers to the consumers has been experimented in the country through *Apni Mandis* in Punjab and Haryana. At present, these markets are being run at the expense of the state exchequer, as a promotional measure, to encourage marketing by small and marginal producers without the involvement of the intermediaries. Direct marketing helps to generate the idea of market oriented production and increases profit of the producer. It helps in better marketing, minimizes marketing cost and encourages distribution efficiency. It promotes employment to the producer and enhances the consumers' satisfaction. It provides better marketing techniques to producers and encourages direct contact between producers and consumers. It encourages the farmers for retail sale of their produce also.

Contract farming is another concept of emerging marketing system, where farmers grow selected crop under a 'buy-back' agreement with an agency (entrepreneur or trader or processor or manufacturer). In the wake of economic liberalization, it has gained momentum, as the national and multinational companies have started entering into contracts with farmers for marketing of agricultural produce. They also provide technical guidance, capital and input facility to contracted farmers. Contract marketing/farming ensures continuous supply of quality produce at mutually agreed price to contracting agencies, as well as ensures timely marketing of the produce.

It has already been established by different studies that contract farming is advantageous to the farmers due to its inherent advantages like assured price, ensuring fair return, proper production planning, assured market, technical support, post-harvest technology, freedom from the clutches of middlemen, credit facility for inputs and other cost of cultivations, crop insurance, exposure to new technology and the best practices.

### **5.5 Major Findings of the Study**

Following major findings have been found on the basis of the observations and analysis of the field level data as per the guidelines of the Coordinating Centre.

- 1.** The price spread analysis of orange (TMC) in Channel-I revealed that the producer's share in consumer's rupee was 49.25 per cent. Excluding the marketing cost, pre-harvest contractor/wholesaler's share in consumer's rupee was 8.89 per cent and retailer's share in consumer's rupee was 19.36 per cent while the price spread analysis of orange (TMC) in Channel-II showed that the producer's share in consumer's rupee was 47.25 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 6.75 per cent, wholesaler's share in consumer's rupee was 6.00 per cent and retailer's share in consumer's rupee was 17.50 per cent. The price spread of orange (TMC) in Channel-III showed that the producer's share in consumer's rupee was 43.75 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 5.75 per cent, merchant wholesaler's share in consumer's rupee was 4.25 per cent, wholesaler's share in consumer's rupee was 5.50 per cent and retailer's share in consumer's rupee was 15.75 per cent.
- 2.** The price spread of orange (EMC) in Channel-I indicated that the producer's share in consumer's rupee was 82.25 per cent and producer's marketing cost share in consumer's rupee was 17.75 per cent. The price spread of orange (EMC) in Channel-II showed that the producer's share in consumer's rupee was 67.50 per cent, SHG's marketing cost share was 16.40 per cent and SHG's share was 16.10 per cent.
- 3.** The price spread of potato (TMC) in Channel-I indicated that the producer's share in consumer's rupee was 70.50 per cent. Excluding the marketing cost, retailer's share in consumer's rupee was 12.83 per cent. The price spread of potato (TMC) in Channel-II showed that the producer's share in consumer's rupee was 62.50 per cent. Excluding the marketing cost, commission agent's share in consumer's rupee was 9.17 per cent, wholesaler's share was 5.83 per cent and retailer's share was 8.33 per cent. The price spread of orange

(TMC) in Channel-III revealed that the producer's share in consumer's rupee was 54.17 per cent. Excluding the marketing cost, commission agent's share was 5.00 per cent, merchant wholesaler's share in consumer's rupee was 3.33 per cent, wholesaler's share was 7.50 per cent and retailer's share was 14.17 per cent in consumer's rupees.

4. The price spread of potato for Channel-II in EMC showed that the producer's share in consumer's rupee was 90.91 per cent and producer's marketing cost share in consumer's rupee was 9.09 per cent. It may be noted that the price spread for the channel-I for EMC potato could not be worked out as the consumer received only processed product after value addition.

From the analysis of the price spread, it was noticed that there was a wide gap between the prices received by the farmer and the prices paid by the consumer in TMC. In TMC for both the crops, the marketing channels were found to be circuitous and involve a large number of handlings, which means increased costs in the agricultural marketing and fluctuation of prices from market to market for the same quality of produce. It was observed that with respect to price spread analysis in EMC for both the crops, the farmer's share in consumer's rupee was more than TMC. It is because of less involvement of market intermediaries, which reduces the marketing costs and marketing margins.

5. The market efficiency simply states that if the price received by the farmer is higher, then the marketing efficiency also becomes higher. Modified measure of market efficiency for orange in TMC was found at 0.97 for channel-I, 0.90 for channel-II and 0.78 for channel-III while for EMC, it was found at 4.63 for channel-I and 2.08 for channel-II. The modified measure of market efficiency with respect to potato in TMC was found at 2.39 for channel-I, 1.67 for channel-II and 1.18 for channel-III while for EMC, it was found at 10.00 for channel-I.

From the analysis of field level data and observation, it may be concluded that farmers enjoyed better margin through EMC marketing for both the crops as compared to marketing through TMC.

6. BCR was worked out for orange and it was found at 3.33 in TMC and 4.72 for EMC while for potato, it was found at 1.78 for TMC and 1.95 for EMC. It can be observed that BCR was higher in EMC for both orange and potato as compared to TMC.
7. Post harvest losses in TMC were higher than that of EMC for both the crops. All orange farmers in the sample for both TMC and EMC opined that important causes for post harvest

losses was perishable nature of the commodity and lack of proper storage besides long distance to the market. On the other hand, for post harvest losses of potato in TMC was attributed to perishable nature of the commodity (64%), lack of proper storage (60%) and the losses as waited for better prices(30%). And under EMC, perishable nature of the potato (60%) and dearth of storage facility (70%) were the major reasons for post harvest losses as reported by the sample farmers.

- 8.** Harvesting season of orange starts from the month of November till the mid of January and for both TMC and EMC, more than 73 per cent of orange was sold by the farmers in December. With respect to potato, harvesting time was February to March. For TMC, 54.94 per cent of potato was sold by the farmer in February and 45.06 per cent was sold in March while for EMC 40.00 per cent of potato was sold in February and 60.00 per cent was sold in March.
- 9.** Farmers always expect a reasonable price for their produce. Therefore, it is utmost necessary for the farmers to have an idea on the current market price of their produce, so that they can dispose off their produce in right time. The farmers with TMC & EMC in case of both the crops collected information personally, discussing with other farmers and commission agent/traders. Farmers in the sample also reported that they did not get any information on price from AGMARKNET.
- 10.** Credit plays an important role to meet different requirements of the farmers. Farmers generally borrow money from different institutional and non-institutional sources. However, farmers in the sample area reported that they did not take any loan from institutional or non-institutional sources. It may be mentioned here that the orange farmers in TMC and potato farmers in EMC took only input advances from the buyers without any interest.
- 11.** Under TMC for orange, 74 per cent farmers received input advance (fertilizer and pesticides) from the commission agent and under EMC for potato, 100 per cent farmer received input advance (fertilizer, pesticides improved seeds, knowledge on crop practices, extension support) from the buyer. It was observed that farmer preferred procuring of the input from the buyers, as they did not have to pay any interest on input advances. At the time of final payment for the produce, buyers just deducted the input advances.
- 12.** For perishable commodities like orange and potato, cold storage facility and refrigerated transport is necessary to maintain its quality. The study revealed that due to lack of

appropriate cold storage facility in the growing area, the orange and potato growers sell their produce just after harvest to the market functionaries. The traders and intermediaries take full advantage of the situation and exploit the growers from their due share. No storage facilities were available in the orange and potato growing areas. Therefore, the farmers had no option but to sell the produce at whatever price offered by the traders/buyers.

- 13.** The number of fruit canning and processing units in the study area is very limited. Public and Private sector small units are not sufficient to cope with the quantity available for canning. Due to geographical isolation and inadequate transport net work, the industrialists are not coming forward to invest in fruit canning units. There is sufficient scope for steady export of processed value-added fruit products of orange to the neighbouring countries. Owing to inadequate processing units, exports of processed items are also not taking place. So far, no export promotional efforts have been made in the study area by any agency.
- 14.** Adoption of proper packaging and handling in accordance with the delicacy of fruit is essential to retain the quality of the product. Special packaging and handling is a must for ripe fruits, or else there are chances of wilts and rots in the process of transportation in the tropical climate. So far as orange is concerned packaging for transportation was not done. For this reason, transit loss was found to be substantial. Besides proper packaging and handling, refrigerated transport is essential for transportation of delicate fruits to distant places without deterioration of the quality. However, such facilities are almost nil in the study area.
- 15.** In case of TMC, harvested orange is not graded or standardized according to size, shape and degree of ripeness before handing over to the market functionaries. The usual practice is that fruits of all the sizes and qualities are sold in one common lot. So, the farmers producing better qualities were not assured of better price. From the common lot, the wholesalers and the retailers graded the produce according to size, shape and degree of ripeness and they charged different rates for different grades of items and thus earned handsome margins.
- 16.** The greatest handicap in marketing of orange is the absence of market near the growing centres in the study area. The layout of location of rural markets is not well planned. It is also to be noted that there is no local demand for the orange as the local people used to get the fruits as gift from the growers. So, the markets in the rural areas either suffer from glut or from lack of business. In some areas, the producer had to move long distance to dispose off



small marketable surplus and hence the growers preferred to hand it over to the itinerant traders operating in their areas.

17. The farmers in the study area did not have information on market demand and market prices of orange and potato in different markets. Due to lack of access to market information, the growers were found to be price-takers always. Coverage of media like radio, television and newspaper on market prices of fruits are also very limited. So, inadequate market information and market knowledge is considered as a major constraint for the producers and the traders.
18. Adequate market infrastructure is important for building up of an efficient marketing system for orange and potato. In case of TMC for orange, 40 per cent farmers expressed that condition of the roads to market were average and 60 per cent reported as good while for EMC, 50 per cent opined as average and 50 per cent opined as good. On the other hand, for TMC in potato, 46 per cent farmers expressed that condition of the village roads to market were average and 54 per cent opined as good while for EMC, 40 per cent opined as average and 60 per cent reported as good. With respect to godown and cold storage facilities, majority of the farmers opined that these facilities were very poor. Other facilities such as auction arrangements, supervision of sale, loading, sorting, weighing, packing were average or good. Sample farmers for both the crops reported that they did not have any telephone connection or computer and internet facilities.
19. The main constraints reported by the sample farmers pursuing EMC for both the crops were a) the quality, b) smaller quantity of the produce purchased by the buyers and c) the EMC was not as strong as TMC.

## 5.6 Policy Implications

Based on the findings of the study and the observations and problems identified at the field level, the following policy implications are offered for increasing the efficiency of the agricultural marketing system in Assam.

1. There is urgent need to establish cold storage facilities at the assembling market places. Due to lack of cold storage facilities near the growing areas, the orchardists had to sell their produce immediately after harvest at a lower price. So, the expansion of cold storage facilities in the fruit growing areas should receive priority. (**Attention: Directorate of Horticulture, Govt. of Assam & Assam State Agricultural Marketing Board**)

2. It is also a necessity to develop the road communication system to facilitate the transportation of marketable goods to the places of assembling and marketing Centres. To provide minimum road communication facilities, link roads should be built to connect a cluster of villages growing orange and potato crops having marketable surplus. Improvement of rural roads/communication facilities would encourage marketing of the produce and reduce the cost of transportation as well as the transit losses. The development of rural road will not only ensure easy marketing, it will also be helpful in improvement of the status of socio-economic conditions of the people. (**Attention: PWD, Govt. of Assam**)
3. The growers of orange and potato may be encouraged to adopt some measures for value addition, including grading and standardization of the produces according to size, shape and degree of ripeness/maturity. Such a step may help the growers to get different rates for different grades instead of selling of one common lot, which led to lower returns to growers.

It may be mentioned that adoption of suitable handling methods and packaging is needed in accordance with particular quality features and climatic conditions. The perishable commodities like orange cannot be carried on heavy sacks. Therefore, suitable packaging is necessary to avoid deterioration of the quality. (**Attention: Directorate of Horticulture, Govt. of Assam & Assam State Agricultural Marketing Board**)

4. The inadequacy of fruit canning and processing units in the area under study is considered as one of the major constraints in marketing of commercial horticultural crops. There is urgent necessity of establishing processing units in the areas producing surplus fruits. The processed fruit products can be supplied to the army cantonments in the region besides supplying the products in local markets. (**Attention: Directorate of Horticulture, Govt. of Assam & Assam State Agricultural Marketing Board**)
5. The market information and market news may be linked with agricultural extension services, adult literacy centres, gaon panchayats to educate the illiterate poor farmers, which would be helpful to the growers to make bargain with market functionaries as per prevailing market prices. (**Attention: Directorate of Horticulture, Govt. of Assam & Assam State Agricultural Marketing Board**)
6. The Government policy of announcing support price system helped the growers of certain important cereal and cash crops only. But there is no provision of fixation of support prices for commercial horticultural crops like orange & potato. It is therefore, suggested that the

concerned State Governments should be empowered to enact pricing policy to fix minimum prices for the principal horticultural crops in the State. (**Attention: Directorate of Horticulture, Govt. of Assam**)

7. The provision of institutional credit particularly from co-operative and institutional sources should be strengthened. Due to the non-availability of institutional credit, the wholesalers/merchant wholesalers of fruits in the study area make pre-harvest contract by extending loan at an exorbitant rate of interest. Strict regulations towards institutional credit may help the growers through disbursement of timely credit on easy terms. (**Attention: NABARD, Co-operative Banks and Commercial Bank**)
8. Considering the complex problems of agricultural marketing, the State Government should conduct regular inspection of markets and market surveys to study the various problems and situations. In some of the States market intelligence on stock, arrivals and sales are regularly collected from primary and secondary markets for policy formulations. Many a time, it was seen that the information on price fluctuations and trend of arrivals are collected by the Government Agencies, but the result of market inspection and surveys are not passed on to rural institutions like Panchayats, Community Development Centres etc. In some markets, notice boards are hung up indicating the prices of various commodities. It was felt that the Government of Assam should make concerted efforts to have an effective and reliable market intelligence service. It will facilitate regular supply of agricultural produce at reasonable price, which may be remunerative to the growers as well. (**Attention: Directorate of Horticulture/Agriculture Marketing wing, Govt. of Assam & Assam State Agricultural Marketing Board**)
9. It was observed that there is considerable scope of export of processed products of orange to the neighbouring countries. As such, the State Government should come forward with some policies of tax exemptions together with priorities for improvement of quality and standard through need-based potential research and development effort.

To achieve the untapped potential of export, systematic market survey should be made by Agricultural and Processed Food Products Export Development Authority (APEDA) on the basis of demand of fruits and fruit products in the neighbouring countries. Much talked about “Look-east policy” of the Government may also be taken into account in this context. Some of the private exporters may be encouraged for setting up of modern fruit

processing industries in the region for promotion of export. An increase in exports will increase the producer's return from fruit crops as well (**Attention: APEDA, Special Economic Zone under Commerce Ministry, Govt. of India**)

**10.** The State Agricultural Marketing Boards were set up in almost all the North-Eastern States to improve the marketing of agricultural commodities. The powers of the Board range from advisory to full control over sales of some agricultural produces. The Boards are expected to perform certain task of the State Agriculture Department to protect the interest of the growers.

The Marketing Board's role however, is not satisfactory in the context of the interest of the growers of horticultural crops. Various methods can be used by the Marketing Boards to improve the farmer's return through market control devices. The ASAMB may take initiative to explore the new EMCs & enthuse the growers to go for it for their own benefits. (**Attention: Assam State Agricultural Marketing Board**)

### **Conclusions:**

The study has highlighted that the prospect of horticultural crops in Assam is bright provided the marketing facilities and the needed infrastructural supports are ensured. The study has adequately focused that with the establishment of fruit processing industry and improvement of marketing net work may go a long way in commercialization of horticultural crops in Assam. It has also been revealed that due to lack of infrastructural support and sound marketing net work, the orange and potato growers have been deprived of remunerative prices for their total marketable surplus and are not in a position to minimize the post harvest losses at various stages of marketing.

However, the farmers have been benefited by selling their produce through EMC in case of orange & potato. But the marketing operations under EMC is still at an infant stage and many more actions in the line of policy suggested are to be taken to ensure an efficient agricultural marketing system in the state of Assam.

\*\*\*\*\*

## References

- Mahalanobis, J.N (1972):“Price Spread and Marketing Margin in selected Commodities in West Bengal.” *Indian Journal of Agricultural Economics*, 37(1):70-76
- Goswami, M.C(1983): “Problems of Rural Markets and Marketing in North-Eastern India with Special Reference to Agricultural Marketing”, J.B.Ganguly (Ed.)“Marketing in North-East India”, Omsons Publications, New Delhi, , p.18 – 30
- Gopalan, M. and T. M. Gopalan (1991): “Marketing Efficiency of Co-operative in Potato Region in Tamil Nadu: An Empirical Study.” *Indian Co-op. Rev.*, 28 (3): 203-221.
- Sarkar, A.N (1992): “Processing and Marketing of Agri-Horticultural Produce in the N.E.”, *The Hindu Survey of Indian Agriculture*, p.113-115.
- Pandey, R.M.( 1993) : “Horticultural Prospects in the New Economic Environment”, *Agricultural Situation in India*, October, p.542
- Kaul, G.L(1997): “Horticulture in India – Production, Marketing and Processing”, *Indian Journal Agricultural Economics*, Vol.52, No.3, July – Sept., p.565
- Saikia,T.N and D.Borah(1998): “Marketing of Pineapple and Citrus(Orange) in Assam and Meghalaya” *Agro-Economic Research Centre for North East India, Jorhat*: 122-130
- Sen,C and R. P. Maurya(1998):“Marketing of Vegetables in Sewapuri Block.” *Agriculture Marketing*, 41 (2): 29-31.
- Acharya, S.S. (1998), “Agricultural Marketing in India: Some Facts and Emerging Issues”, *Keynote Paper, Indian Journal of Agricultural Economics*, Vol. 53, No. 3, July-September, Pp. 311-32.
- Devaraja (1998): “Channels and Price Spread in Potato Marketing- A Case Study in Belgaum District.” *Agriculture Marketing*, 41 (1): 19-21.
- Acharya, S.S., and Agarwal, N.L., (1998) : “Agricultural Marketing in India.” Published by Oxford and IBH, New Delhi pp. 159-162.
- Ricks Donald., Timothy Woods and James Stern (1999): “Supply Chain Management Improving Vertical Coordination in Fruit Industries”, *Journal of Food Distribution Res*, 30 (3) :44-53.
- Anil Kumar and Arora (1999): “Post Harvest Management of Vegetables in Uttar Pradesh hills.” *Indian Journal Agriculture Marketing*, 13 (2): 6-14

- Haque, T. (2000): "Contractual Arrangements in Land and Labour Markets in Rural India" *Indian Journal of Agricultural Economics*, 55(3): 233-252
- Government of India (2001): "Report of Expert Committee on Strengthening and Developing of Agricultural Marketing", Ministry of Agriculture, June
- Susanta, K, Roy (2001): "Integrated Post Production Management N Food Processing- The National objective." *Indian Food Packers*, 55 (2):76-84.
- Kalita, Chitra(2001) : "Production and Marketing of Orange" Mittal Publications, New Delhi, p.37.
- K.L. Chadha (2001) : "Handbook of Horticulture", Indian Council of Agricultural Research, Directorate of Information and Publications of Agriculture, Pusa, New Delhi, p.1-2.
- Government of India (2002), "Report of Inter-Ministerial Task Force on Agricultural Marketing Reforms", Ministry of Agriculture, May.
- Chaturvedi, Jamana, , S.P.R. Chaurasiaand & L.R. Singh(2002): "Export Marketing of High Value Horticultural Crops : Present Status, Constraints and Future Strategies", *Agricultural Economics Research Review*, p.130-131.
- Pandey, N.K., Arun Pandit., Nalini R. Kumar and Rana, R. K., (2003): "Price Spread Analysis of Potato Marketing at Shimla, *Journal of Indian Potato Association*, 30 (1-2): 99-200.
- Yadav, R.K., D.S. Yadav, N. Rai and K.K.Patel(2003): "Prospects of Horticulture in North-Eastern Region", *Envis Bulletin, Himalayan Ecology*, Vol.II, No.2, p.10.
- Acharya, S.S. (2004): *Agricultural Marketing in India, Volume 17, Millennium Study of Indian Farmers*, Government of India, Academic Foundation, New Delhi.
- Asokan, S. R. (2005) : "A perspective of contract farming with special reference to India", *Indian Journal of Agricultural Marketing*, 19(2): 94-106.
- Punjabi,M and V Sardana (2006): "Initiative and Issues in Fresh Fruit and Vegetable Supply Chains in India" in P.J.Batt and J.J.Cadilhon (Ed).*Proceeding of International Symposium on Fresh Produce Supply Chain Management*, December 6-10,Chiang Mai, Thailand,115-125
- Sreenivas Murthy, D, T.M., Gajanana, M. Sudha and V. Dakshinamoorthy (2007): "Marketing losses and their impact on marketing margins: A case study of Banana in Karnataka", *Agric. Econ. Res. Rev.*, 20 (1): 49-60
- Assam Agricultural Marketing Board (2007):"The Assam Agricultural Produce Market Act, 1972 (as amended up to 2006)." Guwahati, pp.27-33

Government of Assam(2008): “Statistical Handbook , Assam,2008”,Directorate of Economics and Statistics”,Guwahati

Kakaty, G (2009): “Potentialities of Horticultural Crops and Market Accessibilities in Assam and Meghalaya with special reference to Technology Mission for Integrated Development of Horticulture.” Agro-Economic Research Centre for North East India, Jorhat, Study No.130:109-110

Government of Assam (2010): “Economic Survey 2009-10”, Directorate of Economics and Statistics”, Guwahati

Government of India (2011): “Economic Survey 2009-10”, Ministry of Finance & Company Affairs, Economic Division

\*\*\*\*\*

**Action Taken Report on the comments received from the Coordinating Centre, Institute of Economic Growth, University of Delhi, North campus, Delhi on “Impact of Emerging Marketing Channels in Agriculture-Benefits to Producer- Sellers and Marketing costs and Margins of Orange and Potato in Assam.”**

**Comment 1**

Please give a preface with acknowledgement of IEG’s role and mention the names of the coordinators.

**Action**

Preface attached.

**Comments 2**

Chapter-2 may be reorganized to provide a picture of Assam’s state of market regulation before and after the amendment of the Act. The situation prevailing just prior to the amendment may be clearly indicated by the section heading. Discussions on reforms in Assam should be in a section separate from the general all India case to bring out the state specific picture.

**Action**

The matter is reviewed and incorporated as per suggestion.

**Comments 3**

In the profile on sample districts (not sample households) provide also information such as % SC, % ST, % Hindu , average farm size, irrigation intensity.

**Action**

Done as per suggestion

**Comments 4**

Table 3.4-3.7 etc. can include indicators as percentage share of values. For example, Table- 3.6 data of cropping pattern must give the shares of major crops, and in particular the share of the study crops as percentage of GCA needs to be given.

**Action**

Reviewed and incorporated in the respective tables as per suggestion.

**Comments 5**

Please give the road density in table 3.8.

**Action**

Done as per suggestion

**Comments 6**

In all tables please insert a row or a column exclusively for the units (Kg. /hectare. % no. etc.). In Table 3.5 of page 37 percentage shares are needed with the numbers.



**Action**

Done as per suggestion

**Comments 7**

Make the distinction between Table 3.25 in page 48 and Table 4.4 in page 64 sharper by modifying the headings. Apparently, table 4.4 refers to area under study crop and table 3.25 to all crop area. Kindly clarify.

**Action**

Clarified

**Comments 8**

Explain how the samples are selected. What is the sample frame in each case? Are farmer groups contacted in the case of orange? Write in detail in the method section.

**Action**

The matter is reviewed and selection of samples and sample frame in each case has been incorporated.

**Comments 9**

In page 61 how potato is marketed in detail. Similar details on orange marketing are desirable.

**Action**

Details furnished as suggested.

**Comments 10**

For both cases specify clearly how price is determined in the channels (auction etc.)

**Action**

Incorporated as per suggestion.

**Comments 11**

Please check tables 4.8 and 4.9 to ensure correctness of the entries and in general check that all tables are mutually consistent.

**Action**

Done as per suggestion

**Comments 12**

In page 60, 3 emerging channels are described for orange while the market efficiency related statistics are reported for 2 channels. Are all the channels not sampled? State clearly what channels are reported for.

**Action**

Clarified as per suggestion

**Comments 13**

Table 4.18- 4.27 give channels wise information. In the same table or elsewhere the average should also be reported.

**Action**

Incorporated as per suggestion.

\*\*\*\*\*