CHAPTER – I

INTRODUCTION

Background

Agriculture has always been India's most important economic sector, which has an impressive long term record of taking the country out of serious food shortages despite rapid population increase. The most outstanding achievement since independence is the phenomenal growth of food grains output which increased from 50.82 million tones in 1950-51 to 230.67 million tones in 2007-08 (Government of India, 2008). Production of oilseeds, sugarcane and cotton has also increased more than four fold over the period. GDP from agriculture has more than quadrupled; the increase per worker has been rather modest. While slower growth of GDP in agriculture than non-agriculture is expected, the main failure has been the inability to reduce the dependence of workforce on agriculture significantly by creating enough non-farm opportunities to absorb the labour surplus in the rural areas. Slow agricultural growth is a concern for policy makers as some two-thirds of India's current agricultural practices are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation system and almost universal lack of good extension services are among the factors responsible. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure and excessive regulation (World Bank, 2008).

Current agricultural marketing system in the country is the outcome of several years of Government intervention. The system has undergone several changes during the last 50 years owing to increased market surplus, increase in urbanization and income levels and consequent changes in the pattern of demand for marketing services, increase in linkages with distant and overseas markets and changes in the form and degree of government intervention. In agricultural marketing system market structure is important, which determines the market conduct and performance. The

structural characteristics govern the behavior of marketing firms. The market structure has never remained static but kept on changing with the changing environment. An important characteristic of agricultural produce markets in India has been that private trade has continued to dominate the market with the large quantities required to be handled by the private trade, the size and structure of markets overtime have considerably expanded (Government of India, 2007).

The agriculture sector needs well functioning market to drive growth, employment and economic prosperity in rural areas. Agricultural markets are regulated under and governed by respective State Agricultural Produce Marketing (Regulation) Acts, generally known as APMC Act. Despite limited reforms in agricultural marketing, the impact of policy changes has slowed down since state governments are reluctant to implement them (Landes and Gulati, 2003). It is due to the fact that markets lack even basic infrastructure at many places. When APMCs were first initiated there was significant gain in market infrastructure development, however, this infrastructure is now out of date, especially given the needs of a diversified agriculture. At the beginning of the Eleventh Five Year Plan only one-fourth of the markets have common drying yards, trader modules viz., shop godown, and platform in front of shop exist in only, 63.00 per cent of the markets. Cold storage units are needed in the markets where perishable commodities are brought for sale. However they exist only in 9.00 per cent of the markets and grading facilities exist in less than one-third of the markets. The basic facilities viz., internal roads, boundary walls, electricity lights, loading and unloading facilities, and weighing equipment are available in more than 80.00 per cent of the markets. Farmers' rest house exist in more than half of the regulated markets, covered or open auction platforms exist in only two-thirds of regulated markets (Government of India, 2008).

It is evident from above that there is considerable gap in facilities available in the market yards. Besides, state intervention has resulted in creation of marketing monopolies, which are detrimental to the growth of agriculture and farmers. In view of this, the government has recognized the importance of liberalizing agriculture marketing in the wake of the WTO-SPS Agreement. Several initiatives

have been taken to develop agricultural markets. An Expert Committee was constituted under the Chairmanship of Shri Shankarlal Guru for recommending the development and strengthening of the country's agricultural marketing system. On the basis of the committee's report and thereof recommendation of the Inter-Ministerial Task Force, Ministry of Agriculture formulated a model APMC Act in 2003, and advised states to implement the act. The amended act aims at complete transformation of agricultural marketing in India to make it more market and growth oriented. The important features of the amended APMC Act are as hereunder:

- Under the new act, private players will be allowed to open and operate agricultural 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 a few states have adopted it and that too partially. The resistance to the adoption of the model act is from the state governments and traders/commission agents. The states/AMPCs have the fear of losing market fee if alternative markets are established. The traders/commission agents have the fear of losing their business/income.

It is clear that amended APMC Acts will allow varying degrees of flexibility and increasing role of private players in improving the efficiency of the agricultural marketing value chain. In many states; APMC Act amended and several states are yet to notify the relevant rules that would make the amendment fully operational. In view of implementation of the model APMC Act the agricultural marketing situations have tremendously changed and, thus, the Marketing Division of the

Department of Agricultural and Co-operation, Ministry of Agriculture, Government of India assigned its Agro-Economic Research Centres/Units to undertake a study entitled **IMPACT OF EMERGING MARKETING CHANNELS IN AGRICULTURE MARKETING --- BENEFIT TO PRODUCER-SELLERS AND MARKETING COSTS AND MARGINS OF MAJOR AGRICULTURAL COMMODITIES** in their states. Accordingly, Agro-Economic Research Centre, T M Bhagalpur University has conducted the study in Bihar & Jharkhand states.

Objectives

The broad objective of the study is to assess the impact of marketing emerging channels in Agricultural marketing and benefit to producer-sellers and marketing costs and margins of major agricultural commodities in the states.

Research Questions

To pursue the objective of the study, followings are research questions:

i. *What has been the farmer's share in the consumer rupee in emerging models vis-à-vis the traditional marketing channels?*
ii. *What is the degree of market efficiency and incidence of post harvest losses in emerging marketing channels vis-à-vis traditional marketing channels?*
iii. *What are the market practices and services provided by different agencies in the emerging marketing channels vis-à-vis traditional marketing channels?*
iv. *What are the constraints faced by the farmers and different market functionaries in the emerging marketing Channel vis-à-vis traditional marketing channels?*

Review of Literature

In this section, an attempt has been made to review some of the existing literature on emerging marketing channels, conducted so far in different states in India. In fact the channels of marketing are an important aspect of agricultural marketing affecting the prices paid by consumers and shares of them received by the producer. The shorter the channel, lesser the market costs and cheaper the commodity to the consumer. When the channel is long with more intermediaries, prices are more and producer's share is less. The channel which provides commodities at cheaper price to consumer and also ensures greater share to producer is considered as the most efficient channel.

Traditionally, the focus was on regulation of marketing but after liberalization of trade or implementation of model APMC Act (2003), the concept of development has been introduced allowing private markets, farmers-consumers markets such as direct marketing, contract farming, future trading, etc. Several studies have been carried out on these emerging channels for different commodities but here reviews are restricted to fruits and vegetables only on which the present study is based.

A study by Dileep et. al (2002) on "contract farming in Tomato: An Economic Analysis" focuses on the cost, returns and resource use efficiency, and the effect of contract farming on price, production and income of farmers as also yield variation, marketing costs and the possible losses to farmers. The study was conducted in Ellenabad block of Sirsa district in Haryana, where the contract system has been in practice since 1989. Two processing firms, viz., Hindustan Lever Limited (HLL) and Nijjer Agro Foods Ltd. (NAL) were studied. A sample of 50 contract farmers were interviewed (30 under HLL and 20 under NAL), out of 125 tomato growers under the contract system, 50 non-contract farmers were interviewed during 1999-2000. The study reveals that the processing firms preferred large farmers for contract farming. The yield and gross return obtained by contract farmers were almost double compared with that of non-contract farmers. The uncertainly over yield and price was much less under contract farming.

There have been some studies of the contract farming system in Punjab recently. Besides describing the contract system and operations of the companies, most of them look at the economics of contract farming system in specific crops, compared with that of the non-contract situation and/or competing traditional crops of the region, e.g., in tomato (Bhalla & Singh, 1996; Haque, 1999; Rangi & Sidhu, 2000; Singh, 2000), potato (Satish, 2003; Singh, 2003). It is found that contract production gave much higher (almost three times) gross returns compared with that from the traditional crops of wheat, paddy and potato in case of tomato due to higher yield and assured price under contracts. The studies of tomato contract production in Punjab and Haryana (Haque, 1999; Dileep et.al; 2002) also found that net returns

from these crops under contracts being much higher than those under non-contract situations though product cost was also higher under contract system (Dileep et.al 2002).

Institutions like cooperatives, contract farming and growers' association are considered to improve producers' access to markets, minimize transaction costs and remove production constraints. It is believed that a single gateway to the regulated markets would save time and improve efficiency. Ever since India's National Agriculture Policy has envisaged the participation of the private sector through contract farming and land leasing arrangements to allow accelerated technology transfer, capital inflow and assured market for crop production, especially of oilseeds, cotton and horticultural crops, investment in food processing industry on part of the private sector is being encouraged. This would help farmers of fruits and vegetables through backward linkages of such investment. There is a greater need that the role of private institutions is to be encouraged as the government's ability to intervene is seriously constrained by resources (Chengappa, 2006). Vertical coordination of farmers with cooperatives, contract farming and retail chains would facilitate them to deliver better output due to lower market risk, better infrastructure, public investment, acquired extension services, created awareness to prevailing and new technologies, better prices, stable income, etc. Its multiplier effect helps in increasing incomes, output and employment (Birthal et. al. 2007).

Birthal et.al (2005) compared the gross margins of poultry, dairy and vegetables contract farmers with independent farmers producing the same commodities. The gross margin for contract vegetable growers was 79.00 per cent greater than that of independent vegetable growers' income.

Previously, marketing of fruits and vegetables was undertaken by the farmers' co-operatives only. Now a number of big corporate houses like the Reliance, ITC, Aditya Birla Group, Godrej and Bharti Airtel Group have entered the retailing of fresh fruits and vegetables. Some of the retail and wholesale stores are already in operation by the name of Reliance Fresh, Choupal Fresh, Namdhari's Fresh etc. ITC, Metro and Adani Fresh are also entering the wholesale market. Exports of fresh

fruits and vegetables are being done with EUREPGAP certification by Namdhari's Fresh and Bharti Airtel. They have developed a supply chain with forward and backward linkages operating in an efficient manner with heavy investments in infrastructure and cold chain. These business houses have indicated that contract farming may get them timely, consistent and adequate supply of produce of good quality (Mittal, 2007).

The traditional model of vegetable retailing in India involved vegetables being sold in small stores on the roadside, and there were no formal rules regarding weighing, bargaining and quality issues, let alone cold storage and sophisticated supply chain. Produce travelled slowly and inefficiently through a series of intermediaries before reaching the hands of customers, suffering mark-ups, wastages and quality losses along the way Reliance Fresh marketing model operates on affordability and a hygienic ambience along with a good shopping experience, said Mukesh Ambani, the Chairman of RIL. We will always buy from the farmer, almost never from the Mandi (wholesalers), said a group official. For example, the leafy vegetables, aubergines, tomatoes and green chilies in one of the outlets in Mumbai were sourced directly from farmers in nearby districts. This in effect got translated into lower prices by at least 15.00 per cent to 20.00 per cent. We will be very affordable and competitive in the market, but we are not playing a price game here. The full effort is to deliver to the customer, said Chief Executive, Customer operations, K S Venugopal (Pradhan & Managaraj, 2008). According to early news report, farm producers selling to Reliance Fresh were getting better returns on vegetables produced by them. 'Rangers Farm,' the farm produce procuring arm of 'Reliance Retail' was buying Bhindi (Okra) at more than $0.25 (Rs. 10/kg) against $0.18/kg (Rs. 7.50) (less 10 % commission) being offered by traditional vegetable wholesalers. Most farmers were also able to save on time, effort and money as they were not required to transport their produce to the wholesale markets, which in some cases were located 40-50 km away from their villages. Reliance on the other hand, had set up it procurement centres nearby. There was one catch; however, vegetables before

being accepted by the Reliance arm were required to be graded based o their quality and freshness (HBL, 2006).

As an alternative channel of marketing to reduce the number of intermediaries and benefit both producers and consumers, the establishment of co-operative marketing societies is generally advocated. A study (Subrahmanyam & Gajanana, 2000) found that the co-operatives are found to be the best channel of marketing mango, next only to direct sale to consumers, as the growers realized the maximum share of 74.00 per cent in the consumer price as against only 40.00 per cent and 28.00 per cent when they choose to sell through commission agents and PHCs respectively. The consumers are benefited from co-operatives as they paid only Rs. 355/- crate in co-operative retail outlets against Rs. 455/- crate when they purchased from other agencies. In Jalgaon, the banana growers realized Rs. 97.00 per quintal by selling through co-operatives but could get only 80.00 per quintal by selling through other agencies. Similarly, the chikoo growers in Gujarat would get higher prices by selling through co-operative societies compared to other agencies (Parmar et. al; 1989). In case of vegetable the wholesale price realized by the brinjal growers in Karnataka was higher (Rs. 51.45 qtl), when it sold through co-operatives than when they marketed it through commission agents at Rs. 46.27/qtl. The share of producers selling through the cooperatives was 61.00 per cent as against 55.00 per cent in case of those selling through the commission agents. The Horticulture Producers' Co-operative Marketing and Processing Society Ltd. (HOPCOMS) in Karnataka helped the producers by offering favourable wholesale prices compared to other agencies.

The National Dairy Development Board (NDDB) has started the Fruit and Vegetable Unit of SAFAL, which is one of the first fruit and vegetable retail, chains set up as a part of the Mother Dairy Foods Processing Ltd. The retail unit provided a direct link between fruit and vegetable growers and consumers. This market is a move to introduce a transparent and efficient platform for sale and purchase of horticultural produce by connecting growers through Growers' Associations with farmers and wholesale buyers in various markets across the country. The model involves

establishment of an alternative marketing structure that provides incentive for quality and productivity thereby improving farmers' income (SAFAL Website).

Sahadevan (2007) in a study on potato and menthe conducted in Uttar Pradesh, has found that given the socio-economic profile of farmers in these crops, the rural farming community is more likely to have indirect benefit such as improved prices, market transparency than the direct benefit of participation. Even in the US, where futures in agricultural commodities are more than a century, only a small percentage of farmers use them directly. In the majority of cases they access the market through farmer's associations/co-operatives, processors and traders. On the country commodity futures markets in India are in a nascent stage not only in terms of direct participation of farmers and/or by any pool operators on their behalf but also in terms of awareness about its utility. The indicators of the markets however show that the introduction of futures has made certain beneficial impacts especially in menthe oil market. First, the information flow from futures markets to ready (spot) market has strengthened price realization in the market channel. While the post harvest price moved up from Rs. 289.70 in 2004 to Rs. 369.30 and Rs. 448.20 in 2005 and 2006 respectively, the pre-harvest price which rose to Rs. 662.45 in 2006 from Rs. 352.50 in 2005 showed a major boost after the launch of futures in April, 2005.

In view of above brief reviews, it can be said that besides, the traditional channels in marketing of fruits and vegetables several other channels have emerged in the country, which transect good volume of the produce and farmer get better return than the selling of their produce in traditional or regulated market system. Though, this study will try to identify the available marketing channels in the states of Bihar and Jharkhand in fruit (mango and vegetable (cauliflower) respectively.

Methodology

The present study has been conducted in the states of Bihar and Jharkhand covering one horticultural crop namely mango (fruit) in Bihar and cauliflower (vegetable) in Jharkhand. The study is based on both primary and secondary data. In order to trace the supply chain of the traditional and emerging channel, primary data is

collected from the following respondents to whom a detailed schedule is administered:

i. Farmers
ii. Intermediaries
iii. Retailers
iv. Consumers

The detail of the respondents is as follows:

Table No. 1.1: Distribution of Sample Farms and Other Intermediaries in Bihar & Jharkhand

State	Crop	Traditional Channel	Emerging Channel
Farmers			
Bihar	Mango	50	50
Jharkhand	Cauliflower	50	50
	Other Intermediaries		
Bihar			
Intermediary	---	05	05
Retailer	---	15	00
Consumer	---	15	15
Jharkhand			
Intermediary	---	05	05
Retailer	---	15	00
Consumer	---	15	15

Primary data for mango is collected from Sultanganj and Nathnagar blocks of Bhagalpur district in Bihar and for cauliflower from Kanke block of Ranchi district in Jharkhand. Secondary data is also collected to support our analysis and is collected from various government reports and Websites. Besides a focus group discussion and personal interaction with market functionaries and academic professionals were also organized to elicit the information and data as well.

Tabulation of data is carried out by using simple statistical tools to observe the various marketing practices in case of both traditional and emerging marketing channel. To measure the marketing efficiency, Achayra's method was adopted using the formula as below:

$$MME = FP \div (MC + MM)$$

MME = *Modified Measure of Marketing Efficiency*
FP = *Net Price received by the Farmers*
MC = *Total Marketing Cost*
MM = *Total net margins of intermediaries*

The reference period of primary data collection is the agricultural year 2009-10.

Limitations of the Study

i. In Bihar the study has been undertaken in open or unregulated marketing system, which is nothing but traditional marketing system. There is no any visible emerging marketing channel in the state in case of marketing of fruit particularly mangoes. However, a new intermediary has entered into the marketing chains, which are supposed to reduce the intermediaries' margin. So identification of visible emerging channel is one of the limitations of the study.

ii. In Jharkhand, the study has been undertaken in regulated marketing system but in case of vegetables it is almost unregulated. Though the intermediaries are large. In case of emerging channel Reliance Fresh (RF) Retailing has been examined but unavailability of sufficient data somewhat limits the scope of the study.

Organization of the Report

The report has been prepared into six chapters. Chapter – I covers the background, objectives, review of earlier studies, methods of data collection etc. A background of agricultural market reforms in case of traditional and emerging marketing methods in the states of Bihar & Jharkhand has been captured in Chapter – II. Chapter – III is consisted of sampling methods and socio-economic profiles of the sample households. A comparative analysis of the benefits and constraints for the agents trading in the traditional and emerging marketing channels has been presented in Chapter – IV. In Chapter – V market margins, price spread and market efficiency has been discussed. Summary and Conclusions along with the policy prescriptions have been presented in the last Chapter i.e., VI.

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CHAPTER – II

A BACKGROUND ON AGRICULTURAL MARKET REFORMS: TRADITIONAL AND EMERGING MARKET CHANNELS

Background

India has made many strides on production front but awfully lacking in the field of agricultural marketing. However, both the Central Government and the Governments in the respective states enacted the laws such as Essential Commodities Act (1955), Agricultural Produce Marketing Regulation Act (1972) and the Prevention of Black Marketing, and; Maintenance of Supplies of Essential Commodities Act (1980).

Over the years, to achieve an efficient system of buying and selling of agricultural commodities, most of the wholesale markets and some of the rural primary markets have been brought under Agricultural Produce Marketing Regulation (APMR) Act Agricultural Produce Market Committees constituted as per APMC Acts to manage the markets. Many of the regulated wholesale markets have a principal market with large area and relatively better infrastructure and number of sub-yards attached to the principal market. The establishment of regulated markets has helped in creating orderly and transparent marketing conditions in primary assembling markets. Further, increase in the number of regulated market yards, from a meager 286 at the time of independence to 7557 in the year 2005, has helped in increasing the access of farmers to such orderly market places. These regulated markets (7557) consist of 2428 principal markets and 5129 sub-yards.

This development, coupled with construction of approach roads and network linking primary markets with secondary wholesale and terminal markets, also improved the process of price discovery at the primary market level where most of small farmers dispose off their produce. Increase in access of farmers to market places, apart from reducing transaction costs of farmers has helped the small farmers

having low marketed surplus and are not able to transport their surpluses to long distances. Though precise data on the proportion of benefits of regulated markets going to the small and marginal farmers are not available, there is evidence to show that expansion of such physical infrastructure in rural areas has helped small and marginal farmers more by increasing their access to the markets. During 1992-93, agricultural commodities worth Rs. 62,000 crore were traded in these regulated wholesale markets, which account for about 43.00 per cent of the value of marketed surplus.

This does not mean that everything is fine in all the regulated markets of the country. In fact these policies prevented free mobility of agricultural produce and thus, segmented the Indian domestic market into many smaller markets. The supply chains developed under these legislations have been primarily local or regional in nature. The restrictions of private domestic investment in APMC controlled markets prevented emergence of large, organized, efficient supply chain of fruits and vegetables. The scenario has started changing in last few years. Presently agricultural marketing system in India suffers from number of constraints i.e., infrastructure related, government regulation related, technology related, poor information on domestic and overseas markets and opportunities, uncertain and unstable produce prices, delayed and late payment to producers and low producer's realization.

Moreover, efficient marketing is essential for the development of the agricultural sector as it provides outlets and incentives for increased production, the marketing system contribute greatly to the commercialization of subsistence farmers. Worldwide Governments have recognized the importance of liberalized agriculture markets. The Task Force on Agricultural Marketing Reforms set up by the Ministry has suggested Marketing Reforms set up by the Ministry has suggested promotion of new and competitive agricultural market in private and co-operative sectors to encourage direct marketing and contract farming programmes, facilitate industries and large trading companies to undertake procurement of agricultural commodities directly from the farmer's fields and to establish effective linkages between the farm

production and retail chains. There is necessity to integrate farm production with national and international markets to enable farmers to undertake market driven production and adoption of marketing practices.

If agricultural markets are to be developed in private and co-operative sectors and to be provided a level competitive environment vis-à-vis regulated markets, the existing framework of state APMC Acts will have to undergo a change. The state has to facilitate varying models of ownership of markets to accelerate investment in the area and enable private investment in owning, establishing and operating markets. Working of existing government regulated markets also needs to be professionalized by promoting public private partnership in their management. Appropriate legal framework is also required to promote direct marketing and contract farming arrangement as alternative marketing mechanism. Keeping, this in view, the Government of India began the market reform process and formulated a model law (2003) for agricultural market. This model act has been circulated to all the states for amendment in their respective APMC Act. The amended act aims at complete transformation of agricultural marketing in India to make it more market and growth oriented. In view of this, several states have already amended their APMC Act to allow private investment in markets and direct buying of produce from the farmers by traders and processors. It is believed that improvement in domestic marketing channels would increase efficiency in the process of marketing transactions and maintain quality.

Despite the radical changes that the model APMC Act can usher in, so far, only a few states have adopted it and that too slowly. The status of implementation of model APMC Act particularly in the states of Bihar and Jharkhand may be seen as below:

SN	State(s)	Reforms Status	Remarks
1.	Bihar	BAPMC Act repealed w.e.f., 01/09/2006	Open Agricultural Market
2.	Jharkhand	Reforms to JAPMC Act have been done for Direct Marketing, Contract Farming and Markets in Co-operative/Private Sectors. It amended w.e.f., 06/12/2008	Dialogues with the corporate bodies or individuals are taking place for contract farming etc.

BIHAR

State of Agricultural Marketing

The market regulation of agricultural produce in India, being in existence for nearly five decades of which two decades in the development of wholesale agricultural markets, has been more or less a permanent feature of agricultural marketing planning. It has also been an important plank of government's attitudes towards eliminating the marketing deficiency of agricultural commodities and providing remunerative prices to the farmers. The Royal Commission on Agriculture (1928) much before the Independence has stressed upon the importance of a dependable agricultural marketing system[1]. The commission in its report suggested that the most hopeful solution of the cultivators marketing difficulties seem to be in the improvement of communications and the establishment of regulated markets. However, it took a long period to recognize that regulated markets could perform valuable function in improving agricultural marketing system which will have significant impact on agricultural development. As such, many states have embarked upon the development of agricultural markets through granting the statutory provisions of regulatory measures. The state of Bihar was no exception to it. It was in the year 1958 that the Government of Bihar took an important step in this direction and a Bill known as the 'Bihar Agricultural Produce Markets Act' was passed in 1960 in order to revamp and radicalize the traditionally bound exploitative system of agricultural marketing through the statutory provisions of the regulation of agricultural markets. The main object of passing the Act was "*to secure to the cultivator better prices, fair weighment and freedom from illegal deductions. A fair deal for his produce is a good incentive for the agriculturist to adopt improved agricultural programme.*[2]"

With the enforcement of the Act 10 wholesale agricultural markets were selected in the first phase for regulation. In the second phase, 60 Market Committees were formed and 65 wholesale markets were regulated. Till 2006, 96 regulated agricultural markets were in existence in the state. The district wise break up of APMCs is indicated in table 2.1.

Table No. 2.1: District wise Break-up of APMC in Bihar till 2006.

SN	District	Number
1.	Patna	8
2.	Nalanda	2
3.	Gaya	4
4.	Nawada	2
5.	Rohtas	4
6.	Bhojpur	4
7.	Aurangabad	2
8.	Bhagalpur	5
9.	Munger	6
10.	Begusarai	3
11.	Darbhanga	2
12.	Madhubani	5
13.	Samastipur	5
14.	Purnea	9
15.	Saharsa	9
16.	Katihar	2
17.	Muzaffarpur	4
18.	Suitamarhi	5
19.	Vaishali	3
20.	East Champaran	3
21.	West Champaran	4
22.	Saran	2
23.	Gopalganj	1
24.	Siwan	2
Total		**96**

However, the long drawn experience of the regulation of markets indicated that it did not have perceptible effects on improving the agricultural marketing system in Bihar. The main lacuna was found to be in the non-availability of market infrastructural facilities which could not attract the farmers to sell their produce at the urban wholesale agricultural market centres. Consequently, it was realized that to improve the agricultural marketing system without adequate infrastructural facilities was very difficult. However, due to limited resources of the state government only 10 wholesale agricultural market yards were constructed during the Fourth Plan period. The scheme of development of wholesale markets was boost up with the financial assistance of IDA (World Bank) which provided a loan of $ 14 Million during the year 1972. Under this loan provision it was envisaged to construct 50 modern market-yards at the important urban wholesale agricultural market centres.

It was presumed that with the development of market yards the benefit such as movement of wholesale agricultural markets towards perfection will emerge in a significant way.

The results of evaluation studies[3] indicate the changing agricultural marketing scenario during the post-market development programmes (After 1980). Despite the reluctance of the traders to shift their trade to the newly established market-yard the trade has been started taking place in the new market yards in the presence of large number of buyers and sellers which, by and large, indicate the reduction in concentration of trade in a few hands. In the traditional agricultural marketing system the movement of the produce from the farm level to the ultimate consumer was done through a number of intermediaries whose role has always been in suspect. Despite their indispensability in the functioning of agricultural market it was no less true that the characteristics of market structure were similar to that of monopolistic situations reflecting the concentration of agricultural trade. The findings of a recent study indicate that during the post-market yard period the volume of food grain trade is less concentrated compared to the pre-positively yard period[4]. The competitiveness has thus been positively influenced by the gain of the market development programmes.

Another factor which largely influences the competitive environment of a market is the extent of knowledge about market prices. The observations from the evaluation studies indicate that the main source of information for the producer-sellers is either their counterparts or traders. It has been further observed that the local traders usually quote the low prices and in lack of effective operation of open auction system in the market yard the producer-sellers are forced to sell their produce at their dictated low prices. Though there is provision of open auction system under the regulatory measures but in most of the markets it has simply become non-functional. The producer-sellers can be saved from this situation with the help of pledge scheme but in majority of the markets it has not been implemented. In a study[5] on the pledge finance it has been found that the scheme provides benefits to the producer-sellers in two ways: First, minimizing the farmer's dependency on the

intermediaries and second, securing the farmers to get higher prices for their produce. It can be more instrumental in case of small farmers whose contribution amounts to be about 50 per cent of the total marketable surplus mostly in the form of distress surplus[6]. The scope of distress sale may completely be eliminated with the help of pledge of crops to the Market Committees. Consequently traders would find it very difficult to purchase the produce at their own dictated prices taking advantage of poor financial position and weak bargaining power of the small farmers. This is crux of the market development programme as it is an important issue to be seen whether this programme has been helping the poor peasants in a significant way. The marketing problems of small farmers are still persistent. Thus, from the small farmer's point of view the gains of the market development are limited. It demands for strengthening the market intelligence and extension services to make aware of them regarding the various salient features of agricultural marketing regulation, method of sale and the prevailing market prices of the commodities.

The wide fluctuation in prices of commodities and the variations in prices across the markets are of serious concern which depend both at the macro and the market *per se* level. In both the situations it has been generally found that the prices of agricultural commodities are unduly depressed in the immediate post-harvest period and that they rise to excessive heights in the off season. However, K. Subbaro's observation in his study[7] that the violent year to year fluctuations and inter regional and inter-seasonal price variations during a given year seems to be on the decline in irrigated tracts/crops is similar to that of findings of evaluation studies done in Bihar. These studies have revealed that the range of fluctuation of prices of important food grains has been smoothened than what was found during the pre-market development period (before 1980). Such benefits have not been reflected in case of arrivals which have the market seasonal fluctuation. This may be due to fact that major proportion of agricultural commodities are sold by the farmers especially small farmers immediately after the harvest period during which the prices usually remain low.

There is another aspect of price behavior which, by and large, represent the manipulative power of traders. A few case studies in Bihar indicate that the trader's manipulative power is almost unchanged. The farmer's position is still that of having to bargain if he can, with some one who commands the money, commands the credit, commands the market and comes with the transport. The position of small farmers is more disadvantageous than big farmers. There have been systematic differences in the prices received by the different categories of farmers indicating such marketing situation in which the small farmers receive low prices as compared to their big counterparts[8]. The margins of traders, as indicated by the studies on price-spread, are yet high due to their strong bargaining power. The big farmers have no doubt gained while selling their produce in the market yard due to their accessibility to the market and fetch higher prices for their produce in comparison to small farmers. But even the benefits in case of big farmers cannot be said much significant as revealed from the study on price spread[9]. The study indicates that the intermediary margins account for about two-third of the total price spread indicating thereby situations in which intermediaries operate on higher margins. The gain, however, was noticed in the case of abolition of non-functionary customary charges which has some impact on minimizing the price spread.

In the foregoing analysis the emerging issue relating to change in agricultural marketing scenario in Bihar mainly on account of market regulation and development has been discussed in the light of the two main approaches made to study agricultural marketing efficiency: (a) analysis of the working of markets, delineating their structure and performance, and; (b) analysis of the marketing costs and margins. The findings indicate that the gains of enforcement of statutory provisions of regulation of markets and development of wholesale agricultural markets at the urban centres could not attain the level as anticipated by the policy makers and the market planners. Despite some gains achieved from the market development programme much remained to be done in improving the functioning of agricultural markets. The objectives of regulation of markets are indeed commendable. The experiences, though not very positive and significant, cannot remain static as the competitive environment created by the establishment of well

layout market yards is bound to reduce adequately and properly implemented. It undoubtedly needs a support by a well chalked out market reform strategy in the new perspective.

The past market reform strategy has laid more emphasis on the development of secondary wholesale agricultural markets situated at urban centres than in removing basic constraints that reduced the efficiency of the system viz., poor transportation, lack of provision of pledge finance and credit, inadequate storage facilities, non-utilization of grading implements, poor market intelligence etc. It has been found that in agriculturally developed states where these constraints are not serious, the functioning of markets is to a greater extent efficient compared to least agriculturally developed states where these constraints are serious. Thus, the effective role of market reform strategy is to be visualized from the angle of agricultural development. The Agriculture Policy prepared by the government of India gave emphasis on value added in agriculture clearly mentioned the future thrust to be made in increasing processing, marketing and storage facilities and on revitalizing and democratizing the cooperatives for providing credit, inputs and extension support as also enhanced marketing and processing. A package of comprehensive measures directed towards meeting these challenges would alone be able to raise the efficiency of agricultural marketing system on the one hand and to increase value addition in agriculture on the other.

In view of above and Model APMC Act (2003) prepared by the Government of India and circulated to the states for changes in the existing APMC Act, the Government of Bihar repealed the BAPMC Act w.e.f., 01/09/2006.

After the repeal of Bihar Agricultural Produce Marketing Committee Act (BAPMC Act), agricultural market in the state is functioning without any formal institutional structure. At the time of disbanding of the state Agricultural Marketing Board, in Board had a total of 1324 acres of land in 95 markets, out of which 54 have developed infrastructure on them. A major market development scheme with five modern terminal markets at the top, 54 marketing yards belonging to Bihar State Agricultural Marketing Board (BSAMB) being converted to agri-business centres, in

the middle tier, and 1500 rural haats with developed facilities is proposed at the grass root level. These haats/agri-business centres are proposed to be fed by 10000 on farm Primary Processing Centres (OFPPC) at farm gates. Part of the scheme will be financed under assisted Market Infrastructure Development Project of Asian Development Bank (ADB) and the government would seek funds for the remaining through sources like National Horticulture Mission (NHM) etc.

Following disbanding of BSAMB, the fate of 1500 rural haats under its purview is also hanging in balance. The Board had developed infrastructure during 1978-79 with the World Bank assistance, but at most places these hats are in a very poor shape because of poor maintenance. In the meantime, absence of a fully functional market body has certainly created a significant glitch of non-availability of market intelligence, as there is no information no market arrivals, its prices and destination of dispatch etc.

Features of Traditional and Emerging Marketing Channels

Agricultural commodities move in the marketing chain through different channels. The marketing channels are distinguished from each other on the basis of market functionaries involved in carrying the produce from the farmers to the ultimate consumers. The length of the marketing channel depends on the size of market, nature of the commodity and the pattern of demand at the consumer level.

The marketing pattern of horticultural produces in particular varies considerably from commodity to commodity and from area to area depending upon nature of the commodity and capacity of producers. It is normal for most of the horticultural produce to change hands three or four times before it reaches consumers. Producers sell to village merchants, small commission agents and itinerant dealer in villages. The merchants interact dealers are in use either in weekly hats/primary markets or in wholesale secondary urban market centres. From there, the produce moves to the final consuming market or terminal market and then to retailers and consumers. Producers with large holding may sell directly in wholesale markets.

Moreover, the fruits, in the marketing process, possess slightly different characteristics from other subsistence as well as commercial crops. In rural areas and small towns many producers of mango fruit performs the functions of retail sellers. Large producers directly sell their produce to pre-harvest contractors. Moreover some of the common traditional marketing channels of mango fruit are:

i. *Producer to Consumer;*
ii. *Producer to Pre-harvest Contractor to Wholesalers to Retailers to Consumers;*
iii. *Producer to Pre-harvest Contractor to Retailers/Hawkers to Consumers;*
iv. *Producer to Retailers/Hawkers to Consumer*

In fact pre-harvest contractors are mostly local or of adjoining areas/districts pay visit to the mango orchards at the flowering stage of the fruit with a view to assess/estimate the volume of production and accordingly they undergo agreements with the growers/orchard owners for the period one to five years. However, most of the agreements are made for one or two years. The agreement is made on per mango tree basis.

A study[10] reveals that there are several marketing agencies prevailing in Bihar for the marketing of fruits. The survey finds that 55.38 per cent of produces sold through pre-harvest contractors followed by wholesalers (23.42%), village merchants (15.51%) and retailers (2.53%). Few of growers sold their produces by themselves also. Almost all of these producers who sold their produce by themselves were marginal farmers. Some of the producers (2.53%) sold their produce directly to the fruit processing units. The result further shows that 48.65 per cent mango producers sold their produce through pre-harvest contractor, 14.86 per cent to the wholesalers, 32.43 per cent to village markets or commission agents and 4.06 per cent to fruit processing units. The common marketing channels of mango were as follows:

i. *Producer-Pre harvest Contractor-Wholesaler/Commission Agent-Retailer-Consumer*
ii. *Producer-Wholesaler/Commission Agent-Retailer-Consumer*

This is evident from the analysis of marketing channel, which indicate the pre-dominance of village level intermediaries to whom major proportion of fruits are sold. As such, transaction of fruit is being made by chain intermediaries. It is well known that the marketing efficiency will be high only when the price spread is lower. For fruits there are wide variations in conditions under which fruits are marketed which greatly influence the determinants of marketing efficiency. As a result, the producer's share in consumer's rupee is very low. It is in some cases 40.00 per cent of the consumer's rupee. This is mainly on account of presence of a number of intermediaries who operate at various stages of marketing on high margins. Due to monopolistic character of traders farmer's bargaining power is weak causing them to sell their produce at trader's dictated prices. All these reflect imperfections in the markets and calls for remedial measures. Besides, shortage of skilled and unskilled labourers, lack of good packaging system or high packaging costs, financial problem, high marketing costs, lack of knowledge of marketing intelligence, non-availability of cold storage etc. are the main impediments in marketing of fruits. Exploitation of the intermediaries when became the order of the days, growers opted a new channel, in which the role of pre-harvest contractors started shrinking.

In place traders were introduced, who are mostly local or of adjoining areas. Virtually these traders are from their own society and so are more reliable for them than the pre-harvest contractors. These traders play the role of representative of producer-sellers. Traders, after collecting the mangoes from different growers, arrange the sorting packaging and transporting to big city markets like Kolkata (West Bengal), Ranchi, Bokaro and Dhanbad (In Jharkhand) and sometimes, in Uttar Pradesh, where they sell the produce in mandi through the wholesalers. After selling the produce traders return to village(s) and pay the amount to the respective growers as per their sold volumes of the produce and the price realized in those markets on account of selling the produce. This new chain has emerged mainly after the development of road and connectivity components of the infrastructure and of course, the improvement in law and order in the state in post-BAPMC Act era. This specific channel may be viewed as below:

Producers----Traders----Distant Urban Mandies----Consumers/Buyers

But this has is not been emerging very prominently because of lack of proper trading rules and marketing infrastructure. In fact, wherever these facilities often the scale of operations and capital intensity are high and the locations highly centralized with moot chance of benefits percolating to farmers particularly small farmers. The marketing problems of small farmers emanate essentially from their dependence on traders for credit, which puts them in highly unequal trading relationship with the buyers of their produce. The structural inefficiency is a great barrier for improving the fruits marketing system which removal needs to be based on new approach to the structural reforms in agricultural marketing system in the state. In fact the proposed marketing development scheme should be combined with the credit reforms that enable the farmers in general and small farmers in particular to improve their resource base. Thus, the market accessibility to farmers should be the crux for future market development policy.

JHARKHAND

State of Agricultural Marketing

As stated earlier that the state agricultural produce market act is in existence in Jharkhand. After bifurcation from Bihar in November, 2000 Jharkhand adopted BAPMC Act in toto as it was the then APMC Act in united Bihar. As of now the state has 25 agricultural markets. The district wise detail of APMCs is indicated in table:

Table No. 2.2: District wise break up of APMC in Jharkhand

SN	Division/District	Number
1.	Santhal Pargana	8
2.	Ranchi	5
3.	Singhbhum	4
4.	Palamu	3
5.	Hazaribagh	1
6.	Giridih	2
7.	Dhanbad	2
Total		**25**

After constitution of Jharkhand State Agricultural Produce Marketing Board in 2001 the Board initiated integrated development scheme for development of Haat Bazars (Rural Markets) which play an important role in the marketing of agricultural produce in the state. It includes construction of 4-6 covered and open platforms, internal road in sufficient length, a community hall, a unit of toilets and at least one tube well in 603 haats. In the first please of the scheme 80 such schemes in 65 haats have been taken up for execution. The APMC wise details are as below in table No. 2.3:

Table No. 2.3: APMC wise Break-up of the Scheme of Rural Markets.

SN	APMC	No. of Haats under Construction
1.	Jamshedpur	4
2.	Saraikela	5
3.	Chakulia	3
4.	Chaibasa	8
5.	Ranchi	5
6.	Garhwa	3
7.	Daltenganj	2
8.	Latehar	1
9.	Gumla	2
10.	Khoonti	2
11.	Simdega	4
12.	Lohardagga	1
13.	Ramgarh	3
14.	Kodarma	3
15.	Dhanbad	11
16.	Hazaribagh	3
17.	Giridih	3
18.	Chatra	2
19.	Deoghar	3
20.	Jamtara	2
21.	Dumka	4
22.	Pakur	3
23.	Madhupur	3
Total		**80**

Subsequently JAPMC Act (2000) amended in accordance with the APMC Model Act in 2003, circulated and suggested by the Government of India and came into effective from 06/12/2008. Provisions for direct marketing, contract farming and markets in cooperative/private sector have been made. But it is yet to be effected fully. However, dialogues are going on with corporate bodies for contract farming etc. Corporate sector like reliance fresh (RF) in retail marketing of the vegetables has been allowed to operate in the state.

As regards the marketing of vegetables in the state, unlike subsistence crops, vegetables are mostly marketable and unlike other commercial crops marketable surplus of most of the vegetables, at the very moment, is offered for marketing purposes. This phenomenon takes place because of their perishable nature and leads to wider marketing implications, particularly where transportation, packaging, storage and processing facilities are not adequately developed. Absence of these facilities, on the one hand, results in depressed localized sales and losses to the producers during the peak seasons, and on the other hand, forces the consumers to pay heavily during the lean period. As such, marketing system of vegetables is very complex, vegetables being sold by a number of different methods and by a large number of different kinds of agents and agencies. Further, marketing pattern of agricultural produce in general and vegetables in particular varies considerably from commodity to commodity and from farmers to farmers depending upon the nature of commodity and capacity of the farmers. It is usual pattern of marketing of vegetables to change hands three or four times between producers and ultimate consumers. Vegetable growers sell to village merchants, small commission agents (Kutcha arhatiya) and itinerant traders in either at the village or periodical haat level. The village merchants and itinerant traders resell either in weekly, primary markets or in wholesale secondary urban market centres. From there, the produce moves to the final consuming market or terminal market and then to retailer and consumer. Farmers with large holding may sell directly to wholesale markets but there are few in numbers who directly sell in the wholesale markets.

Features of Traditional and Emerging Channels

Traditionally, the most prominent marketing agencies for marketing of vegetables are kutcha arhatiya (small commission agent) or the agent of the wholesaler who buy vegetables from the farmers in the rural haat/periodical markets. This means that rural periodical markets are the most important place where majority of the farmers particularly marginal and small farmers sell their vegetables. There is least participation of farmers particularly marginal and small farmers in the urban market centres. During in course of survey it has been found that vegetables are not being bought or sold in the market yards in Ranchi (Jharkhand). The co-operative

institution as a marketing agency does not play important role in marketing of vegetables even if it still exists (vegfed) in Jharkhand. It became non-functional in vegetables' co-operative marketing; however it is doing some other works. Earlier study[11] indicated farmers' preferences for intermediaries operating either at the village level or rural haats. Very few liked to sell their vegetables directly in the main market centres i.e., market yard due to difficulties in marketing their vegetables, a majority of farmers were found to feel the absence of co-operative marketing society and developed rural market centres. They also expressed their views that regulatory measures are not enforced in the rural market and the trade at this place is fully controlled by the intermediaries. Very inadequate market infrastructural facilities are created at the rural market places.

Moreover, the chain of intermediaries constitutes the channels of marketing system. The marketing channels for vegetables are fairly common alike food grains except pre-harvest contractors in case of fruits in Bihar. The direct channel exhibits that farmers sell their produce directly to the consumers giving the highest proportion of their share in consumer's rupee. However, this happens very rarely. Almost all transactions are being made by a chain of intermediaries. Following are the important channels for marketing of vegetables.

i. *Producer-Village Merchant/ Itinerant Trader-Wholesaler/Commission Agent-Retailer-Consumer*
ii. *Producer-Kutcha arhatiya (Small Commission Agent)- Wholesaler-Retailer-Consumer*
iii. *Producer-Wholesaler/Commission Agent-Retailer-Consumer*

These channels are noted in a substantial manner in almost all the blocks of Ranchi district, selected for the study. However, the dominance of these channels is not uniform across the blocks, the channels I and II are widely used by the farmers for marketing their vegetables.

Traditionally, Agricultural Produce Marketing Committee (APMC) Act prohibits transaction outside the regulated mandies. The Act does not allow direct marketing and direct procurement of agricultural produce from farmers' fields. APMC Act

restricts the setting up of markets other than by the state governments. This act is coming in the way of a new private initiative in the modern retailing and upgrading of the supply chain especially in the field of fruits and vegetables. In above background, the Jharkhand government amended APMC Act and allowed Reliance Fresh (RF), a corporate house for retailing vegetables. Amendment in the Act has removed restriction on direct procurement from the farmers and provided freedom to the farmers to sell their produce where it is more profitable to them. Now Reliance Fresh (RF) in Ranchi district has emerged as a new channel for retailing the fruits and vegetables. At present RF have three retail outlets and two collection centres in Ranchi.

Reliance Fresh (RF) is the first foray into retailing by the $ 25 billion behemoth known as Reliance Industries Limited (RIL). There were three basic reasons for RIL choosing foods and vegetables for entering into retailing which are below:

First, it wanted to go after the very core of the great Indian retail opportunity. Food accounted for over two thirds of the $ 200 billion Indian retail market and yet, it had seen hardly any penetration by modern retail so far.

Second, its aim was to build a high profitability business and food was perhaps the best place to start.

Third, the grossly inefficient food supply chain provided a well resourced and well managed organization like RIL with an opportunity to think of amending the flaws which would also make business sense[12]. In traditional supply chain, there were several intermediaries, who added their respective profit margin to the cost. Beside, there was huge wastage in transit. This offered potential for savings and profits and Reliance Fresh is a step in that direction.

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CHAPTER – III

SAMPLING: METHODOLOGY AND SOCIO-ECONOMIC PROFILES

This chapter is devoted on sampling base of the reference crops in the states along with the socio-economic profiles of the study area, farmers and crops separately for the states of Bihar and Jharkhand. As discussed in Chapter one, the reference crops for the study in Bihar is mango (fruit) and cauliflower (vegetable) in Jharkhand.

BIHAR

Backdrop

The state of Bihar, endowed with very fertile plain land and sub-tropical climate, holds a vast potential for growing a large variety of horticultural crops. Under horticultural crops Bihar ranks 8th in respect of area (11.21 lakh ha) and 5th in respect of production (173.35 lakh MT) in the country with regard to total area (2.86 lakh) and production of fruits, the state ranks 6th and 7th respectively. Among the fruits, mango is grown almost in half of total fruits area i.e., 49.40 per cent and contributes 34.45 per cent in total fruits production (3853.88 thousand MT). In view of its prominence in terms of area and production among the fruits, mango has been selected as reference crop for the purpose of study.

As regards the selection of district is concerned, besides the larger the area and production specialty of the mango crop in terms of taste, flavor and potentiality to exports has also been considered. It is to be noted that mango is grown almost in all 38 districts of Bihar but 06 (six) districts together cover about one-third of the total area and production of the state. These districts are Darbhanga, Samastipur, Muzaffarpur, East Champaran, Vaishali and Bhagalpur. These are the prominent districts in terms of area and production of mango crop in the state. Out of these districts, Bhagalpur district has been selected for the purpose of the study mainly

because of its specialty in production of Jardalu variety, which is known for its decent flavor, juicy contents and export potentiality. The state government also uses to present it to the high dignitaries of the country for the last 4 to 5 years. Besides, jardalu, gulabkhas and dhudia maldah are grown n abundance and popular all over the country.

In Bhagalpur, Tilakpur, Mehasi and Bhavnathpur villages and its clusters falling under Sultanganj and Nathnagar blocks have been selected due to favourable soil conditions and larger the area of the mango crop. To pursue the primary data collection, the sample have been drawn from both the marketing channels i.e., traditional (TMC) and emerging (EMC). To select the sample unit first of all list of the mango growers has been prepared separately for both the channels and thereafter classified in popular farm size wise categories viz; small (<2ha), medium (2-4 ha) and large (>4 ha). Further, sample has been proportionately drawn, which comes to 50 mango growers each from TMC and EMC, taking together 100 mango growers forms the size of the sample.

Profile of Bhagalpur District

Location and Area

Bhagalpur district is one of the oldest districts of Bihar located in the south-eastern part of the state. The district lies in the southern alluvial plains of Bihar having geographic location of 25°07'-25°30' N latitude and 86°37'-87°30' E longitude. The district is spread over 2569 square kilometers and divided into 3 sub-divisions, 16 blocks, 16 anchals and 242 gram panchayats. The city of Bhagalpur is the headquarters of Bhagalpur division as also of the district and sadar sub-division. The district has 1519 revenue villages.

Demographic Features

As per the census 2011 (P), the population of the district is 30.32 lakh, which accounts for 2.93 per cent of the state's population. The percentage of rural population is 81.32 per cent. The proportion of population belonging to scheduled caste is 8.77 and scheduled tribes 1.86 per cent, as per census 2001. As per census 2011 sex ratio in the district is distressing (879 females/1000 males). The population

density is 1180/sq km in 2011. The literacy rates of males and females are 59.20 and 38.10 per cent respectively. The gender gap in literacy is 21.10 per cent.

Workers

It can be observed from the table 3.1 that as far as total workers are considered 19.63 per cent are cultivators, 48.39 per cent agricultural labourers, 7.43 per cent are engaged in household industries and 24.55 per cent are other workers. Out of the total workers, the district has 67.92 main workers and 32.08 marginal workers. It is to be pointed out here that about 68.00 per cent of total workers are engaged in agricultural activities/operations.

Table No. 3.1: Classification of Workers in Bhagalpur District (Census – 2001)

Workers	Rural		Urban		Total	
	No.	%	No.	%	No.	%
Total workers	739600	37.38	119963	26.55	859563	35.37
Non-workers	1238812	62.62	331956	73.45	1570768	64.63
Total population	**1978412**	**100.00**	**451919**	**100.00**	**2430331**	**100.00**
Main workers	484926	65.56	98960	82.49	583886	67.92
Marginal workers	254674	34.44	21003	17.51	275677	32.08
Total workers	**739600**	**100.00**	**119963**	**100.00**	**859563**	**100.00**
Total cultivators	164710	22.27	4056	3.38	168766	19.63
Agril. Labourers	403973	54.62	11990	10.00	415963	48.39
Workers in Hh Industries	47336	6.40	16545	13.79	63881	7.43
Other workers	123581	61.71	87372	72.83	210953	24.55
Total workers	**739600**	**100.00**	**119963**	**100.00**	**859563**	**100.00**

Source: Census – 2001, series - 11

Income & Employment

Bhagalpur district stood 5th in respect to per capita Gross District Domestic Product (GDDP) in 2006-07 at 1999-2000 prices having Rs. 10205, which is ahead more than state's average of Rs. 8918.

Data on sector wise employment pattern in 2007-08 revealed that 68.10 per cent work force is employed in primary sector followed by 24.50 per cent in tertiary sector and only 7.40 per cent in secondary sector. However, some other socio-economic indicators of the district may be seen from table No. 3.2.

Table No. 3.2: Selected Socio-Economic Indicators: Bhagalpur and Bihar

Particulars		Bhagalpur	Bihar
Population (2011)	Total	3032226	103804637
	Rural (%)	81.32	89.52
	Urban (%)	18.68	10.48
	Rural agricultural workers (% to total workers) census 2001	54.62	47.20
	Population Density (per sq. km)	1180	1102
	Female per thousand males	879	916
	Percentage of SC Population to total (2001)	10.5	15.7
	Percentage of ST Population to total (2001)	2.3	0.9
	Literacy rate (%) 2011	64.96	63.82
	Percentage of rural families below poverty line (2008-09)	55.61	55.57 (04-05)
	Per capita income at current prices at 1999-00 series (in Rs.)	10205	8918
	Share of agriculture sector in SGDP (in 2008-09 at 1999-00 prices	NA	23.58
	Normal rainfall (in mm) June to September 2010	547.30	627.11
	Average size of holdings (2000-01)	0.56	0.58
	Percentage of irrigated area to gross cropped area (in 09-10)	35.15	31.09
	Cropping intensity (%) 2007-08	116	137
Area under major crops (percent to GCA) 2007-08			
	Total Cereals	85.17	81.19
	Total Pulses	6.12	7.48
	Total Food grains	95.10	94.47
	Total Oilseeds	0.38	1.95
	Sugarcane	0.11	1.47
	Fibre crops	0.02	2.11
Productivity (kg/ha) 2008-09			
	Total Cereals	1750	1855
	Total Pulses	710	918
	Total Food grains	1242	1386
	Total Oilseeds	631	999
	Sugarcane	38414	44324

Sources: Economic Survey of Bihar, 2009-10, Census 2001, Hindustan (Hindi) dailies dated 01/04/2011 for census data – 2011 and District Agriculture Office, Government of Bihar.

Land Use Pattern

The district is unique in characteristics that it forms parts of two different Agro-Climatic Zones. Though its major position is situated in Agro-Climatic Zone – IIIA (South Alluvial Plane) but its area falling north of the river Ganges precisely, out of 2 sub-divisions its Naugachia sub-division comes under Agro-Climatic Zone – II (North-East Alluvial Plane). The land use pattern in the district in 2007-08 exhibits the area under forest is negligible and under non-agricultural use 26.70 per cent. The net area sown is 57.00 per cent and the cropping intensity is 1.16. The details of land use pattern are given in table 3.3.

Table No. 3.3: Land use Pattern in Bhagalpur District (2007-08)

SN		Land Use	Area ('000 ha)	In %
		Geographical Area	254.30	--
1.		Forest	0.08	0.00
2.		Barren and Unculturable Land	22.41	8.80
3.		Land put to Non-Agril. use	67.82	26.70
	a.	Land Area	51.46	20.12
	b.	Water Area	16.36	6.40
4.		Culturable Waste	2.34	0.90
5.		Permanent Pastures	0.63	0.20
6.		Land Under Tree Crops	6.59	2.60
7.		Fallow Land	3.21	1.30
8.		Current Fallow	6.20	2.40
		Total Culturable Land (1 to 8)	109.26	43.00
		Net Sown Area	145.04	57.00
		Gross Cropped Area	168.96	66.40
		Cropping Intensity	1.16	

Source: Directorate of Statistics & Evaluation, Government of Bihar

Land Holdings

The district of Bhagalpur is also not uncommon in terms of land-man ratio prevalent across the state. The available data showed that the percentage of marginal farmers is 83.06 per cent with 42.45 per cent land as against the small farmers (11.06%), semi-medium farmers (4.35%), medium farmers (0.94%) and large farmers (0.5%) with 25.52, 19.93, 10.05 and 2.05 per cent respectively. The growing downward trend of land man relationship does not augur well for the farmers in general who have to subsist on agrarian economy only in the district.

Irrigation

Irrigation happens to be one of the major inputs of agricultural practices. Out of the NSA (Net Sown Area) only 28.68 per cent of land is under irrigation. The data on source wise distribution of irrigated area revealed that bore well (73.76%) is the major followed by tank (14.45%), open well (6.34%) and the least is canal (0.12%). The irrigation base in the district is 28.68 per cent, which is far behind the state's picture (77.82%). The percentage of irrigation through groundwater structures is 80.06 to the gross cropped area. On an average the availability of groundwater in the pre-monsoon of 2004 in the district was 5.85 metres. Though, it has gone down during 1980-2004 to the extent to 0.16 metre to 3.15 metres across the blocks in the district (Directorate of Soil Conservation, Govt. of Bihar, 2004).

Cropping Pattern

The main crops in the district are paddy, wheat and maize (kharif & rabi). Besides, pulses oilseeds, cash crops are also grown in the district. Paddy as a main crop produced in 29.20 per cent of the Net Sown Area (NSA). It is grown both in irrigated and rainfed conditions. The total area in 2008-09 being 23567.07 ha (52.54%) and 21293.03 ha (47.46%) respectively with an yield of 20.71 qtl/ha and 12.63 qtl/ha respectively. However, the average yield is 16.87 qtl/ha. Maize being the major crop cultivated in both the seasons viz., kharif and rabi, accounts for 34.50 per cent of the NSA and is grown in both the seasons viz., kharif and rabi under irrigated and rainfed conditions both. The average yield of the rabi maize is 42.17 qtl/ha as against the kharif maize 14.78 qtl/ha. Wheat being one of the major crops is cultivated in 27.96 per cent of NSA of the district, which is also grown in both the conditions; irrigated and rainfed. The yield under irrigated conditions is 24.60 qtl/ha while under rainfed condition it is 15.36 qtl/ha as against the average yield 21.22 qtl/ha of the district. It is significant to note here that about 73.45 per cent of the GCA is covered under paddy, wheat and maize crops in the district.

Sericulture

Moreover, the district is blessed with high quality of mulberry and eri silk threading and fabrication. It is needless to mention that the district is more known for weavers from time immemorial and silk clothes of Bhagalpur are popular world over, and so the city is known as the silk city. The district has more than 30 thousand handloom weavers and one hundred weavers' co-operatives at primary level.

Infrastructure

The infrastructure in Bhagalpur district can be observed in table No. 3.4. It can be observed that out of 1519 villages 851 (56%) are electrified. The road density is 389.7 Sq. km/1000 Sq. km which is far ahead the state's average of 210 Sq. km/1000 Sq. km. In regard to irrigation it is just 31.00 per cent to net cropped area. On communication and education fronts the district is also ahead to the state's average.

Table No. 3.4: Key Infrastructure Components in the District vis-à-vis state.

SN		Components	Bhagalpur	Bihar
1.		Electricity		
	a.	Percentage of villages electrified	56	70
	b.	Percentage of rural consumers to total consumers	61	89
2.		Transportation		
	a.	Road density per 1000 Sq. km.	389.7	210
3.		Irrigation		
	a.	Irrigated area to net cropped area	31	34.6
4.		Communication		
	a.	Population served per post office	9693	8792
	b.	Average area served per post office (Sq. km)	10.17	9.92
5.		Education		
	a.	Literacy rate	49.5	47.53
	b.	Literacy rate --- Male	59.2	60.32
	c.	Literacy rate --- Female	38.1	33.57
	d.	No. of schools (elementary education) per 1 lakh population	57.37	57.13
	e.	No. of secondary and Sr. secondary schools per 1 lakh population	4.71	3.65
6.		Health		
	a.	Birth rate (per 1000 persons)	30.1	31.5
	b.	Death rate (per 1000 persons)	7.9	8.9
	c.	Matermal Mortality Rate (MMR) per 1 lakh live births	400	452
	d.	Infant Mortality Rate (IMR) per 1000 live births	72	63
	e.	Sub centres/PHC/CHC per 1 lakh population	2.17	1.92
	f.	No. of Dispensaries and Hospitals per 1 lakh population	2	1.1
	g.	Doctors (Modern i.e., allopathic system) per 1 lakh population	7	3.75

Source: NABARD, PLCP 2009-10

Socio-Economic Profile of the Sample Farmers

The number of farmers selected for collection of primary data is indicated in table No. 3.5. It can be observed from table 3.5 that 50 farm households each from TMC and EMC, taking together 100 households in Bihar have been selected for in-depth enquiries. The farm wise distribution of the sample farms is as below:

Table No. 3.5: Distribution of Sample Households in Bhagalpur District.

Farm Size	No. of Farmers		
	EMC	TMC	Total
Small (<2ha)	37	21	58
Medium (2-4 ha)	09	12	21
Large (>4 ha)	04	17	21
Total	**50**	**50**	**100**

The details of the sample farms according to religion and caste, household characteristics, education of the household members, transport, farm and storage assets, land holding accounts and farming methods are given in table No. 3.6. The details of these variables show that out of the total, scheduled castes households are 4.00 per cent, other backward castes (31.00%) and general (65.00%). About 83.00 per

cent have their own Ration cards and, of them, only 8.00 per cent belonged to BPL families. About 61.00 per cent have pucca and semi pucca and 39.00 per cent kutcha houses. The average age of the head of the household is 48 years and 7.00 per cent of the household headed by females. Less than 1.00 per cent (0.70%) of the household members are illiterate, 34.96 per cent have completed primary education, 41.02 per cent completed matriculation, 0.42 per cent are diploma holders, 17.00 per cent graduates and 5.90 per cent post-graduates. In regard to major farm implements, 17.00 per cent owning tractor, 29.00 per cent pump sets, etc. The minimum size of farm is 1.04 ha and maximum 10.15 ha. As regards the land holding pattern, 87.50 per cent owned land, 12.50 per cent leased land and 59.00 per cent irrigated land. The results further indicate that 49.00 per cent are using pump sets, 64.00 per cent tractors, 17.00 per cent have own storage facilities and 9.00 per cent on hiring basis.

Table 3.7 gives the details of households' annual income from different sources. It can be noted that the annual income from all the sources of the farm households for traditional marketing channel is Rs. 49846.00 and a bit higher i.e., Rs. 53555.00 for emerging marketing channel. The results finds that farm income is the most prominent source of household income i.e., + 95.00 per cent in both the channels followed by livestock, non-farm salaried income etc. This supports the fact that income from agriculture/cultivation is still the important in rural Bihar.

Table No. 3.6: Socio-Economic Features of the Sample Households in Bihar

SN	Particulars	Response
	Religion and Caste of Farm Households	
1.	% Hindu Households	100.00
2.	% Muslim Households	00.00
3.	% Christian Households	00.00
4.	% Other Households	65.00
5.	% SC Households	4.00
6.	% ST Households	00.00
7.	% OBC Households	31.00
	Household Characteristics	
1.	% Households Owning a Ration Card	83.00
2.	% APL Households	92.00
3.	% BPL Households	8.00
3.	% Pucca and Semi-Pucca Houses	61.00
4.	% Kutcha House	39.00
5.	% Owning Telephone Landline	17.00
6.	% Households owning at least one mobile phone	80.00
7.	% Households owning a Computer	2.00
8.	% Households Having an Internet connection at home	00.00
9.	% Households Owning both Computer and Internet connection at home	00.00
	Head of the Household	
1.	Average Age of the Head of the household (yrs)	48.00
2.	% Female headed households	7.00
	Education of the Household Members	
1.	Non-school goers	11.65
2.	% Household who are Illiterate	0.70
3.	% Household members who have completed primary education	23.31
4.	% Household members who have completed matriculation	41.02
5.	% Members who are Diploma holders	0.42
6.	% Members who have completed under graduation	17.00
7.	% Members who have completed Post-Graduation	5.90
	Transport, Farm and Storage Assets	
1.	% Owning bullock cart/hand cart	22.00
2.	% Owning tractor	17.00
3.	% Owning harvester	00.00
4.	% Owning bicycle	31.00
5.	% Owning motorcycle	27.00
6.	% Owning four wheeler	6.00
7.	% Owning tiller	17.00
8.	% Owning Pump sets	29.00
	Land Holding	
1.	% Marginal farmers	---
2.	% Small farmers	58.00
3.	% Medium farmers	21.00
4.	% Large farmers	21.00
5.	Minimum size of the farm (ha)	1.04
6.	Maximum size of the farm (ha)	10.15
7.	Median size (ha)	2.14
8.	% Own land	87.50
9.	% Leased land	12.50
10.	% Dry land farmers	41.00
12.	% Irrigated farmers (from groundwater)	52.00
13.	% Irrigated farmers (from surface water)	7.00
	Farming methods	
1.	% Using pump sets	49.00
2.	% Using sprinkler	6.00
3.	% Using drip	00.00
4.	% Using tractors	64.00
5.	% Using bullock cart	36.00
6.	% Having own storage	17.00
7.	% Hiring storage	9.00
8.	% Processing the produce on the farm	19.00

Source: Primary Data

Table No. 3.7: Household Annual Income in 2009-10

SN	Particulars	Farmer in TMC (Average in Rs.)	Farmers in EMC (Average In Rs.)
1.	Farm Income	47525.00 (95.35)	51312.00 (95.82)
2.	Livestock Income	1138.00 (2.29)	917.00 (1.72)
3.	Non-Farm Salaried Income	471.00 (0.95)	642.00 (1.20)
4.	Non-Farm Business Income	383.00 (0.76)	307.00 (0.58)
5.	Other Sources (Pension, Remittances, specify)	329.00 (0.65)	377.00 (0.71)
	Total	**49846.00 (100.00)**	**53555.00 (100.00)**

In brackets percentage figures are shown.

The major crops grown by the sample households during the year 2009-10 are cereals, pulses and others. Among the perennial crops mango is grown. The details of all these are given in table No. 3.8. It may be noted from the table that among the perennial crops, mango is grown in 28.86 per cent, 22.06 per cent, 33.86 per cent and 29.73 per cent of the total cropped area on small, medium, large and all farms respectively. Besides mango, the percentage of area under paddy varies between 24.17 per cent on large farms to 29.19 per cent on medium farms. The second largest crop area is falling under wheat, which accounts for 22.19 per cent on all farms. Maize is grown on 7.92 per cent of the GCA. Total pulses account for around 9.00 per cent, other crops occupies 3.87 per cent of the GCA on all farms. This means paddy, wheat and mango (a perennial crop), taking together, accounts for about 80.00 per cent of the GCA.

Table No. 3.8: Major Crops Grown by the Sample Households (2009-10)

In Per cent

SN	Crops	Small	Medium	Large	All
1.	Paddy	30.12	29.19	24.17	27.42
2.	Wheat	21.87	28.11	19.06	22.19
3.	Maize	8.19	7.44	9.16	7.92
4.	Lentil	4.32	6.03	6.12	5.82
5.	Gram	2.09	2.89	1.77	2.02
6.	Moong	0.81	1.07	1.81	1.03
7.	Others	3.74	3.21	4.05	3.87
8.	Mango	28.86	22.06	33.86	29.73
GCA		**100.00**	**100.00**	**100.00**	**100.00**

Study Crop (Mango)

Mango is one of the most delicious fruit in the world. Bihar is fortunate enough to have natural endowments suited for mango cultivation. Mango in Bihar is cultivated since centuries. It has dozen of varieties. The most cultivated varieties in the state are Maldah of Patna, Zardalu and Gulabkhas of Bhagalpur, Mithua of West

Champaran. Besides, Bombaiya, Sepia, Sukul and Sinduria are also popular varieties in the state. Mango is one out of four most fruit crops (mango, guava, litchi and banana) in the state. In 2008-09, the area under mango is about 14.40 lakh ha (49.40 % of total fruits' area) and the production level is 13.4 lakh tones (34.77 % of total fruits' production). The total area under fruit production is 2.9 lakh hectares, which is approximately 5.00 per cent of the net cultivated area. The district wise area, production and yield of the mango fruit is presented in table 3.9.

Table No. 3.9: Area, Production and Yield of Mango Crop during 2006-07 to 2008-09

Name of District	Area (ha)			Production (MT)			Yield (Qtl/ha)		
	2006-07	2007-08	2008-09	2006-07	2007-08	2008-09	2006-07	2007-08	2008-09
1	2	3	4	5	6	7	8	9	10
Patna	3718	3792	3834	36622	22752	37252	9.85	6.00	9.72
Nalanda	2629	2686	2792	24186	15578	26429	9.20	5.80	9.47
Rohtas	5569	5591	5639	48451	26073	52983	8.70	4.66	9.40
Gaya	1149	1183	1262	10111	6388	11898	8.80	5.40	9.43
Aurangabad	1092	1144	1225	9610	6521	11565	8.80	5.70	9.44
E Champaran	9059	9098	9144	83343	52498	85579	9.20	5.77	9.36
W Champaran	6876	7083	7138	64634	48164	67637	9.40	6.80	9.48
Muzaffarpur	9566	9608	9652	93746	64295	90304	9.80	6.69	9.36
Vaishali	8089	8172	8238	79272	56204	77977	9.80	6.88	9.47
Bhagalpur	**7224**	**7287**	**7329**	**70072**	**47365**	**68700**	**9.70**	**6.50**	**9.37**
Banka	6142	6164	6198	49750	39052	56919	8.10	5.20	9.18
Munger	1072	1098	1194	10076	6808	11524	9.40	6.20	9.65
Jamui	949	992	1028	8826	5356	9792	9.30	5.40	9.53
Khagaria	1554	1581	1629	14296	9486	15364	9.20	6.00	9.43
Darbhanga	12812	12863	12896	122995	76750	114025	9.60	5.97	8.84
Madhubani	5894	5946	5994	53635	35676	54486	9.10	6.00	9.09
Samastipur	10278	10384	10436	104836	70612	98638	10.20	6.80	9.45
Begusarai	3929	3958	4011	38111	24539	37441	9.70	6.20	9.33
Purnea	2293	2347	2409	21554	14786	22221	9.40	6.30	9.22
Araria	563	588	626	4898	3410	6049	8.70	5.80	9.66
Kishanganj	688	709	741	6054	4396	7135	8.80	6.20	9.63
Katihar	2639	2084	2736	25334	18251	25164	9.60	6.80	9.20
Saharsa	2418	2447	2481	21520	15663	22621	8.90	6.40	9.12
Bhojpur	4484	4496	4532	42150	26076	40422	9.40	5.80	8.92
Buxar	3251	3283	3319	28934	18240	29375	8.90	5.56	8.85
Kaimur	3261	3272	3305	27392	17668	28923	8.40	5.40	8.75
Jehanabad	241	258	289	2169	1493	3014	9.00	5.80	10.43
Arwal	212	226	284	1950	1312	2999	9.20	5.81	10.56
Nawada	1038	1042	1094	9031	5418	9908	8.70	5.20	9.06
Saran	4957	4977	5018	45604	31852	44157	9.20	6.40	8.80
Siwan	2346	2372	2420	20412	15180	22038	8.70	6.40	9.11
Gopalganj	2842	2885	2947	24441	17887	27139	8.60	6.20	9.21
Sitamarhi	5128	5139	5198	45125	32889	45723	8.80	6.40	8.80
Sheohar	2541	2548	2579	21344	13778	22937	8.40	5.41	8.89
Sheikhpura	772	777	798	7102	4351	7363	9.20	5.60	9.23
Lakhisarai	481	487	531	4137	2922	5173	8.60	6.00	9.74
Madhepura	1873	1881	1923	15733	10662	17807	8.40	5.67	9.26
Supaul	1157	1166	1207	9487	6996	11122	8.20	6.00	9.21
Total	140786	142214	144074	1306943	870350	1329803	9.28	6.12	9.23

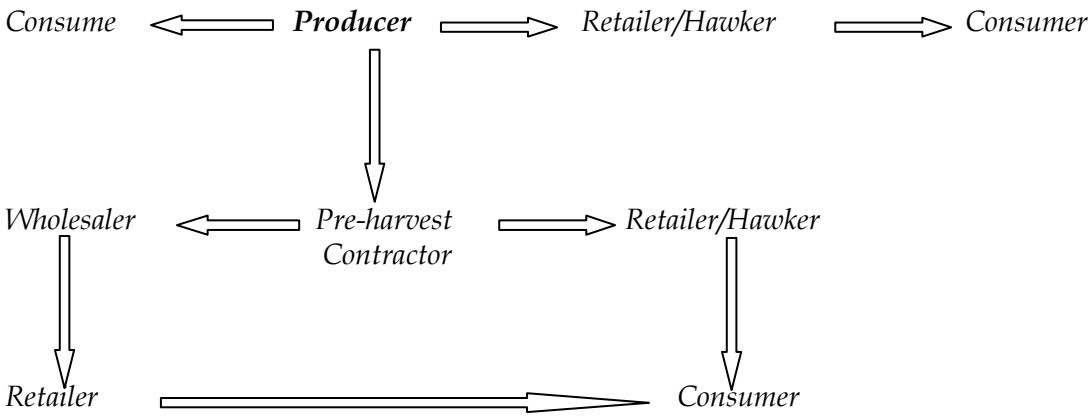
Source: Directorate of Horticulture, Government of India.

Traditional (TMC) and Emerging (EMC) Marketing Channels

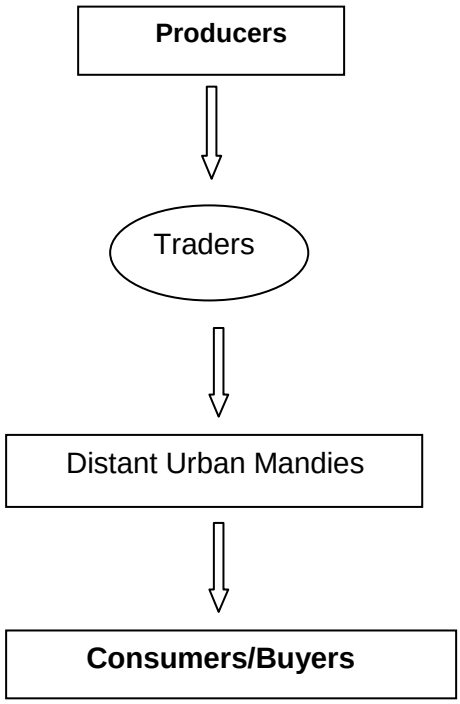
In the traditional supply chain, there are several intermediaries, who add their respective profit margin to the cost. However, the supply chain that connects the vast natural resources and the farmers to both organized as well as unorganized marketing is highly inefficient with several intermediaries and manual handling. The result is lots of wastage (as much as 30%) and small remunerations for the farmers. There is hardly any supply chain integrator or channel master for marketing the produce.

In case of marketing of mango the role of pre-harvest contractor is very important. He enjoys the major share of the margins and operates as per his wishes. It has been indicated in chapter two that there are four marketing channels in marketing of mangoes. Out of that channel-I (Producer to Consumer) and IV (Producer to Retailer/Hawkers to Consumer) widely used by the farmers. Channel –II and III are more prominent at the urban wholesale market level wherein the role of pre-harvest contractor is prominent. This means that urban markets are the most important place where the pre-harvest contractor sells the produce through the wholesalers or retailers. This reveals the fact that there is least participation of producers particularly marginal and small producers. The supply chains of the identified traditional channels (TMC) may be seen in following diagram:

Supply Chain Diagram of the TMC



In recent years, a new chain has emerged in marketing of mango, which has, of course, not much bearing in total sale of produce but it exists. It restricts the role of pre-harvest contractor in traditional supply chains. This new chain is 'traders,' who are mostly from local areas or adjoining areas. These traders have gained the faith of local produces and it is the reason which positioned them in the supply chains. Since direct sale to wholesaler/commission agent by the farmers is very low and also varies considerably among the different farm sizes, it is the 'trader' who collects the produce and moves to urban mandies and performs sale through the agents and ultimately to buyers. After selling the produce, traders return to the village and pay the amount to the respective growers against their sold quantities. After understanding the marketing operations of the traders the supply chain of emerging channel may be conceived through the following diagram:



JHARKHAND

Backdrop

The state of Jharkhand is endowed with a climatic condition that is conducive for successful cultivation of a diversity of horticultural crops. The wide product base, high volume of round the year production, strategic geographic location, abundant sunlight and high domestic demand automatically project horticulture as the thrust area of development. The horticultural produce including off-season vegetables from the state are being preferred in the neighbouring states from their quality and time of availability. The quantum of horticulture production is 37.77 lakh MT from coverage of about 2.56 lakh ha. The district wise area under different vegetables in 2009-10 reveals that among the vegetables cauliflower is largely grown i.e., in 11.28 per cent of the total vegetables area in the state.

As regards the selection of district is concerned, the total vegetables area and the area under the crop have been primarily considered. Besides the area, location and transportation facilities have also taken into account because these are pre-requisites for marketing of any agricultural produce. The total vegetables area is largest in Ranchi district (32851 ha) as well as the area under cauliflower is the 2nd largest (approx 3000 ha) in the state.

In Ranchi district, Pithoria and its adjoining villages, falling under Kanke block have been selected due to having vegetables market and one collection centre of Reliance Fresh. The catchment area of the RF collection centre is 22 villages. To select the bottom unit of the sample list of vegetable growers particularly cauliflowers cultivators was prepared with the help of members of kisan party (a voluntary organization working for the benefit and welfare of farmers), villagers and personal of Reliance Fresh Collection Centre at Pithoria and thereafter classified into three popular categories viz., small (< 2 ha), medium (2-4 ha) and large (> 4 ha). Further sample of 50 vegetables growers have been proportionately drawn from each of the channels i.e., TMC & EMC, taking together 100 vegetables growers forms the size of the sample.

Profile of Ranchi District

Location and Area

Ranchi is the state capital of Jharkhand and largest district in the state. The state as a whole has been divided into seven agro-ecological regions and Ranchi District is part of the Hazaribagh and Ranchi plateau region. It bounded on the north by Hazaribagh and small portion of newly created Chatra district, on the east by the district of Purlia (West Bengal) and part of West Singhbhum, on the south by the district of West Singhbhum and on the West by the districts of Palamu, Lohardagga and Gumla. The district comprises three sub-divisions namely Ranchi Sadar, Bundu and Khunti and 15 development blocks. The total geographical area of the district is 75.25 sq. kms.

Demographic Features

According to census – 2001, the population of the district is 27,850,64 persons which accounts for 10.34 per cent of the state's total population. The percentage of rural population is 64.91. Out of it scheduled tribes constitute 41.80 per cent and scheduled castes 5.2 per cent. The district has 5, 05,508 households. The sex ratio in the district is 938 females/1000 males. The overall literacy rate in the district is 64.60 per cent; however, it is 76.60 per cent among males and 51.70 per cent among females. The gender gap in literacy is 24.90 per cent. The density of population in the district is 362 persons/sq km.

Workers

The number of total workers in the district is 10.79 lakh, which accounts for 38.79 per cent of the total population. The data on classification of workers reveals that out of the total workers 44.92 per cent are cultivators, 18.37 per cent agricultural labourers, 3.04 per cent workers in household industry and 33.68 per cent other workers. The work participation rate in the district is 38.79 per cent with 47.84 per cent in case of male and 29.13 per cent in case of female (table 3.10).

Table No. 3.10: Classification of Workers in Ranchi District (Census 2001)

Workers	Rural		Urban		Total	
	No.	%	No	%	No.	%
Total workers	820479	45.41	259147	26.52	1079626	38.78
Non-workers	986203	54.59	717748	73.48	1703951	61.22
Total population	**1806682**	**100.00**	**976895**	**100.00**	**2783577**	**100.00**
Main workers	523987	63.86	227735	87.88	751722	69.63
Marginal workers	296492	36.14	31412	12.12	327904	30.37
Total workers	**820479**	**100.00**	**259147**	**100.00**	**1079626**	**100.00**
Total cultivators	480329	58.54	4621	1.78	484950	44.92
Agril. Labourers	191485	23.34	6810	2.63	198295	18.36
Workers in Hh Industries	25306	3.08	7464	2.88	32770	3.04
Other workers	123359	15.04	240252	92.71	363611	33.68
Total workers	**820479**	**100.00**	**259147**	**100.00**	**1079626**	**100.00**

Source: Census – 2001, series-21

Climate

Ranchi enjoys a pleasant climate as its average elevation is about 2000 ft. above sea level. Relative humidity also remains low so it is pleasant during the summer. The total rainfall (1971 mm in 2006-07) of the district is more than sufficient to raise 2 to 3 crops satisfactorily, but its distribution is highly skewed, with more than 80.00 per cent of the rain occurring during four months (June-Sept) restricting the farmers with no other choice except to grow only one rainy season crop and during the rest of the year the land remains fallow due to lack of irrigation. Besides, some selected socio-economic indicators of the district may be seen from the table No. 3.11.

Table No. 3.11: Selected Socio-Economic Indicators of Ranchi District and Jharkhand (Census – 2001)

Particulars	Ranchi	Jharkhand
Population	2785064	32966238
% of Rural population	64.89	77.76
% of SC population	5.2	11.8
% of ST population	41.8	26.3
Literacy (In %)	64.6	53.6
Population density (per sq. km)	362	338
Annual Rainfall (2006-07)	1971	1000.5
Share of Agril. In SGDP in 2006-07 at 1999-00 price	NA	15.00
Cropping Intensity (%) 2004-05	106.56	114.92
Area under Major Crops (% to GCA) (2008-09) In '000 ha		
Paddy	233	1685
Wheat	4.49	94
Maize	13.05	214
Pulses	37.51	367
Oilseeds	5.27	127
Total	**293.32**	**2487**
Productivity (kg/ha) 2008-09		
Paddy	1776	1950
Wheat	1975	1500
Maize	2500	1510
Pulses	850	754
Oilseeds	500	560

Source: Directorate of Statistics & Evaluation, Govt. of Jharkhand & Department of Agriculture, Government of Jharkhand.

Land Use Pattern

The statistics of land use pattern of the district reveals that out of the total geographical area, 20.9 per cent area is under the forest. The net sown area is 33.75 per cent of total geographical area, which is higher to the state average of 22.7 per cent. The fallow land is about 25.00 per cent. The culturable waste land is 3.5 per cent. The details of the land uses are given below:

Table No. 3.12: Land use Pattern in Ranchi District (2004-05)

SN	Land Use	Area ('000 ha)	In %
	Geographical Area	758.25	---
1.	Forest	159.14	20.99
2.	Barren & Unculturable Land	39.50	5.21
3.	Land put to Non-agril. Use	74.50	9.83
4.	Culturable Waste	26.32	3.48
5.	Permanent Pastures	2.03	0.27
6.	Land under Tree Crops	10.70	1.42
7.	Fallow Land	66.20	8.73
8.	Current Fallow	124.01	16.36
	Total Culturable Land (1 to 8)	502.40	66.26
	Net Sown Area	255.85	33.75
	Gross Cropped Area	272.65	---
Cropping Intensity		**106.56**	

Source: Directorate of Statistics & Evaluation, Govt. of Jharkhand

Irrigation

In regard to irrigation about 31.56 percentage of farmers having access to irrigation, 12.35 percentage of farmers land having access to irrigation and 1.01 acre/family is average irrigation coverage for farmers having access to irrigation. The data on source wise distribution of farmers revealed that well accounts for 69.16 percentage followed by lift irrigation (19.63%), others (7.48%) and ponds (3.74%). The estimated details of water resources in the district are as below:

Table No. 3.13: Details of Water Resource in Ranchi District

SN	Items	Volume (%)
1.	Surface Water	3061 MCM (85.55)
2.	Ground Water	517 MCM (14.45)
	Total Water Availability	3578 MCM (100.00)
3.	Rainfall Average of 10 years	1380 mm
4.	Runoff Contributing Rainfall	415 mm
5.	Net Annual Availability of Ground Water	51698 HAM (100.00)
6.	Annual Drafting of Groundwater	12564 HAM (24.31)
7.	Groundwater available for Future Irrigation	37089 HAM (71.75)
7.	Stage of Groundwater Development	24 %

Source: CGWB

Cropping Pattern

The main crops in the district are rice, wheat, maize, pulses and oilseeds. Rice is the major crop grown in the district in 1.59 lakh ha which accounts for around 62.00 per cent of the net sown area. Wheat is grown comparatively in lesser area. Maize is the second most important cereal crop after rice and is sown as a rainfed crop during kharif. Besides cereals, pulses are also grown in the district. The district is one of the major Arhar pulse growing districts in the state. The details of crop wise area, production and yield of the important crops grown in the district may be seen in table No. 3.14.

Table No. 3.14: Area, Production and Yield of Major Crops in Ranchi District (2004-05)

SN	Crops	Area ('000 ha)	Production ('000 MT)	Yield (kg/ha)
1.	Rice	159.200	216730	1361
2.	Wheat	2.790	4140	1485
3.	Maize	9.048	11762	1300
4.	Ragi (Marua)	2.010	2010	1000
5.	Arhar	8.028	6422	800
6.	Gram	1.028	1046	1018
7.	Moong bean	0.950	570	600
8.	Lentil	0.445	199	447
9.	Rapeseed	0.361	261	723
10.	Linseed	0.021	12	571

Source: C-DAP – Ranchi, Govt. of Jharkhand

Infrastructure

The infrastructure in Ranchi district can be observed in table No. 3.15, which revealed that about more than 50.00 per cent of the total villages are electrified. As regards the irrigation is concerned, it is distressing. About 31.56 per cent of the total farmers have access to irrigation and 12.35 per cent of the total farmers' land is irrigated. On communication and education fronts the district is ahead to the state's average but in case of health indicators, the district is not placed satisfactorily.

Table No. 3.15: Key Infrastructure Components in the District vis-à-vis State

Components	Ranchi	Jharkhand
Electricity		
% of villages electrified (up to 2006)	50.54	27.35
Irrigation		
% of Farmers having access to irrigation	31.56	39.15
% of Farmers land having access to irrigation	12.35	11.84
Average Irrigation coverage for farmers having access (acre/family)	1.01	0.93
Communication (2005-06)		
No. of Post offices on per 1 lakh population	14.04	11.49
Average area served per Post office (Sq. km)	5.20	3.87
Education		
Literacy rate	64.6	53.6
Literacy rate – Male	76.6	67.3
Literacy rate – Female	51.7	38.9
No. of Primary schools per 1 lakh population	71.56	79.29
No. of Secondary schools per 1 lakh population	6.28	4.32
Health (2005-06)		
No. of PHCs on per 1 lakh of population	1.87	1.94
No. of District Hospital on per 1 lakh of population	0.03	0.04
No. of Doctors on per 1 lakh of population	NA	5.42

Source: A Statistical Profile: Jharkhand (2006), Government of Jharkhand & CDAP Ranchi, Agriculture, Dept. of Government of Jharkhand.

Socio-Economic Profile of the Sample Farms

The number of farmers selected for collection of primary data is indicated in table No. 3.16. It is quite clear from the table that the size of the sample is 100 farm households constituting 50 farm households each from TMC and EMC. The farm wise distribution of the sample farms is as below:

Table No. 3.16: Distribution of Sample Households in Ranchi District

Farm Size	No. of Farmers		
	EMC	TMC	Total
Small (<2ha)	27	18	45
Medium (2-4 ha)	14	22	36
Large (>4 ha)	09	10	19
Total	**50**	**50**	**100**

The details of the sample farms according to religion, caste, household characteristics, education of the household members, transport, farm and storage assets, land holding accounts and farming methods are given in table No. 3.17. The details of these variables show that out of the total scheduled tribes households are only 9.00 per cent, other backward castes 69.00 per cent and other households (general category) 22.00 per cent. About 73.00 per cent farm households have their own Ration cards and of them, 92.00 per cent are belonged to APL families whereas

Table No. 3.17: Socio-Economic Features of the Sample Households in Jharkhand

SN	Particulars	Response
	Religion and Caste of Farm Households	
1.	% Hindu Households	91.00
2.	% Muslim Households	00.00
3.	% Christian Households	9.00
4.	% Other Households	22.00
5.	% SC Households	---
6.	% ST Households	9.00
7.	% OBC Households	69.00
	Household Characteristics	---
1.	% Households Owning a Ration Card	73.00
2.	% APL Households	92.00
3.	% BPL Households	8.00
4.	% Pucca and Semi-Pucca Houses	52.00
5.	% Kutcha House	48.00
6.	% Owning Telephone Landline	12.00
7.	% Households owning at least one mobile phone	71.00
8.	% Households owning a Computer	5.00
9.	% Households Having an Internet connection at home	--
10.	% Households Owning both Computer and Internet connection at home	--
	Head of the Household	
1.	Average Age of the Head of the household (yrs)	39
2.	% Female headed households	---
	Education of the Household Members	
1.	Non-school goers	17.23
2.	% Household who are Illiterate	3.58
3.	% Household members who have completed primary education	43.27
4.	% Household members who have completed matriculation	16.60
5.	% Members who are Diploma holders	---
6.	% Members who have completed under graduation	13.23
7.	% Members who have completed Post-Graduation	6.09
	Transport, Farm and Storage Assets	
1.	% Owning bullock cart/handcart	29.00
2.	% Owning tractor	11.00
3.	% Owning trolley	---
4.	% Owning harvester	---
5.	% Owning bicycle	41.00
6.	% Owning motorcycle	18.00
7.	% Owning four wheeler	2.00
8.	% Owning tiller	---
9.	% Owning Pump sets	12.00
	Land Holding	
1.	% Marginal farmers	---
2.	% Small farmers	45.00
3.	% Medium farmers	36.00
4.	% Large farmers	19.00
5.	Minimum size of the farm (ha)	1.65
6.	Maximum size of the farm (ha)	12.00
7.	Median size (ha)	2.25
8.	% Own land	72.50
9.	% Leased land	27.50
10.	% Dry land farmers	62.00
12.	% Irrigated farmers (from groundwater)	30.00
13.	% Irrigated farmers (from surface water)	8.00
	Farming methods	
1.	% Using pump sets	19.00
2.	% Using sprinkler	10.00
3.	% Using drip	6.00
4.	% Using tractors	42.00
5.	% Using bullock cart	33.00
6.	% Having own storage	11.00
7.	% Hiring storage	6.00
8.	% Processing the produce on the farm	7.00

Source: Primary Data

only 8.00 per cent households are from BPL category of families. About 52.00 per cent households have pucca and semi-pucca dwelling condition and the remaining 48.00 per cent live in kutcha houses. The average age of the head of the household is 39 years. As regards the literacy level only 3.58 per cent are illiterate, 66.50 per cent have attained the primary level of education, 16.60 per cent completed matriculation level, 13.23 per cent graduate and 6.09 per cent post-graduate. In regard to transportation and possessing of farm and storage assets 29.00 per cent households have bullock or hand pulled carts, 11.00 per cent have their own tractor. About 12.00 per cent households have own their own pump sets. In regard to average size of farm, the minimum is 1.65 ha, maximum 12 ha and medium 2.25 ha. The data on land owning pattern indicate that about 72.50 per cent of the total land is own land and 27.50 per cent leasing. The data further indicate that 38.00 per cent of the households' farm is irrigated.

Table No. 3.18 gives the details of households' income from different sources on both the channels viz., traditional and emerging. The total annual household income for traditional channel has been estimated at Rs. 45732.00 whereas that of a bit higher for emerging marketing channel households (Rs. 50836.00). The data on source wise income indicate that farm income is the most prominent source of the household's income on both the channels followed by livestock and others.

Table No. 3.18: Annual Household Income in 2009-10

SN	Particulars	Farmer in TMC (Average in Rs.)	Farmers in EMC (Average In Rs.)
1.	Farm Income	42965.00 (93.95)	48771.00 (95.94)
2.	Livestock Income	1710.00 (3.74)	1182.00 (2.33)
3.	Non-Farm Salaried Income	319.00 (0.70)	303.00 (0.60)
4.	Non-Farm Business Income	471.00 (1.03)	265.00 (0.53)
5.	Other Sources (Pension, Remittances, specify)	267.00 (0.59)	315.00 (0.62)
	Total	**45732 (100.00)**	**50836.00 (100.00)**

In parenthesis percentage figures are shown.

The major crops grown by the sample households during the year 2009-10 are paddy, wheat, maize, pulses, oilseeds, vegetables and others. Among the vegetables, cauliflower is grown by all the sample households. The details of area under the crops are presented in table No. 3.19. The data showed that nearly 60.00 per cent of the gross cropped area on all farms are covered under cereals i.e., paddy, wheat and maize and about 30.00 per cent of GCA under vegetables. It further revealed that cereals are mainly grown for own consumption whereas vegetables as commercial crops.

Table No. 3.19: Major Crops Grown by the Sample households (2009-10)

(In %)

Crops	Small	Medium	Large	All
Paddy	40.25	37.80	38.75	38.90
Wheat	8.10	11.50	10.55	11.15
Maize	5.45	6.17	10.73	8.45
Pulses	3.15	2.25	3.40	3.28
Oilseeds	2.60	2.40	1.75	2.05
Vegetables	29.15	31.53	30.67	30.72
Others	11.30	8.35	4.15	5.45
GCA	**100.00**	**100.00**	**100.00**	**100.00**

Study Crop (Cauliflower)

In Jharkhand, vegetables have been grown for pretty long. In its plateau region even off season vegetables are grown due to climatic advantage. There is, however, wide variation in the proportion of areas under cultivation of different vegetables. The important vegetables are cauliflower, cabbage, tomato, brinjal and ladyfinger. As already referred, for the purpose of study, cauliflower has been selected. For a study on marketing of vegetables say one or many, it is important to know the proportion of area under the selected crop i.e., cauliflower in the total vegetables' area, which is 11.26 per cent in the state. The district wise details of all these are given in table 3.20.

Table No. 3.20: District wise Area under Total Vegetables and Cauliflower 2009-10*

SN	Districts	Area under Cauliflower		Total Vegetables Area	
		In ha	In Percentage	In ha	In Percentage
1.	Ranchi	3000	11.00	32851	13.57
2.	Gumla	880	3.23	8204	3.36
3.	Lohardagga	980	3.60	8669	3.58
4.	Palamu	580	2.13	10086	4.17
5.	Garwa	520	1.90	7440	3.08
6.	Simdega	310	1.14	2570	1.07
7.	Latehar	280	1.03	3445	1.43
8.	East Singhbhum	1014	3.70	15549	6.40
9.	West Singhbhum	680	2.50	9571	3.96
10.	Saraikela	600	2.20	3505	1.45
11.	Hazaribagh	2160	7.92	22250	9.19
12.	Chatra	650	2.37	9365	3.87
13.	Kodarma	650	2.37	5980	2.47
14.	Giridih	1530	5.60	16925	6.99
15.	Bokaro	695	2.55	8885	3.67
16.	Dhanbad	2120	7.77	14761	6.10
17.	Dumka	5670	20.78	23130	9.54
18.	Deoghar	1140	4.17	9810	4.05
19.	Godda	1140	4.17	10800	4.46
20.	Sahibganj	1040	3.80	9680	4.00
21.	Jamtara	1000	3.67	4905	2.03
22.	Pakur	650	2.37	3810	1.58
	Total	27289	100.00	242191	100.00

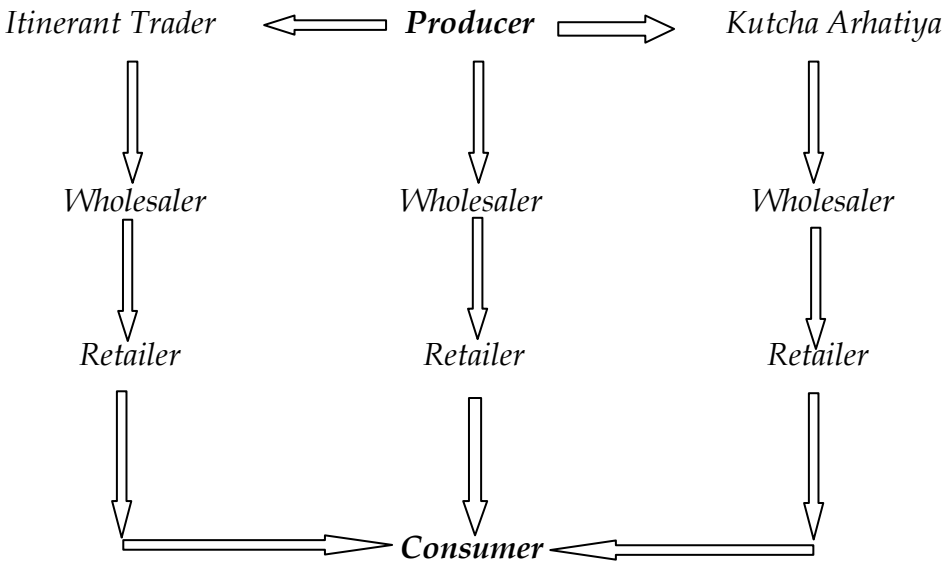
- Provisional

Source: Directorate of Agriculture, Government of Jharkhand

Traditional (TMC) and Emerging (EMC) Marketing Channels

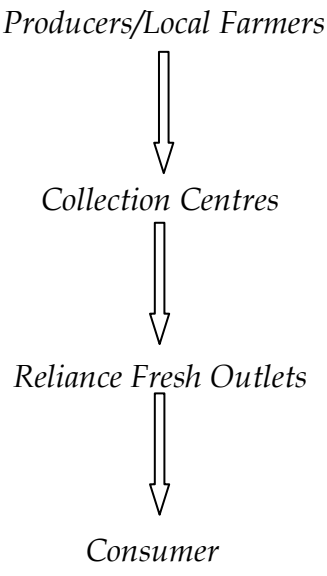
Traditionally, the marketing pattern of vegetables in Jharkhand by the analysis of the distribution of agencies to which marketable surplus or produce is sold indicate that prominent marketing agencies are commission agent, village merchant/itinerant trader and the wholesaler. The overall scenario reveals that there is least participation of farmers particularly the marginal and small farmers. Moreover, there is almost the same case or channels in marketing of cauliflowers in the state. The supply chains of the identified intermediaries of traditional channels (TMC) in marketing of cauliflower may be seen in following chart:

Supply Chain Diagram of the TMC



Since 2006 vegetables retailing by Reliance Fresh (RF) began in Ranchi along with two other districts of Jharkhand. RF adopted a business model of operating through small and medium size stores. Reliance Fresh intended to bring high quality fresh vegetables to the consumers at an affordable price. A few thousand farmers have been hooked on to the Reliance Retail Supply Chain in the district through its collection centres, which are linked with consortiums where grading and standardization takes place. Reliance Fresh's current supply chain diagram may be seen in following chart:

Supply Chain of Reliance Fresh



CHAPTER – IV

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

The purpose of this chapter is to compare the benefits and constraints for the agents who are trading in **Traditional Marketing Channel (TMC)** and **Emerging Marketing Channel (EMC)** in both the states. The analysis has been presented in respect of surveyed farmers, intermediaries and markets. To give sharp focus on cultivator and marketing of fruit *(Mango)* in Bihar and vegetable *(Cauliflower)* in Jharkhand, threadbare view on characteristics of sample households method and practices of cultivation, economics of cultivation etc. have been discussed.

BIHAR

Farmers' Profile

The detail of the sample households in the selected district according to farm size, level of education, occupational pattern, social group, per farm livestock unit, per farm annual income are given in table 4.1. The data showed that average size of farm on small, medium and large is 1.20, 2.52 and 5.22 hectare respectively. Taking together all the sample farms the average size of holding is 2.33 ha. This shows the possibility of the economic viability of majority of farms. An important aspect of the social base is the educational level which plays a crucial role in the modern farming system. The cultivation and marketing of commercial crops like fruits needs special attention for obtaining better productivity and margins. In this regard it can be noted that there is very low level of illiteracy among the farm households. Taking together all sample households only 9.00 per cent is illiterate. The education level at the higher level is moderate having 18.00 per cent at the total farms. However, it higher on small farms (22.40%) followed by medium (14.28%) and large (9.52%).

Among the different level of education, maximum proportion is reported to be at secondary level (34.00%) at total farms. However, it is higher on large farms (38.10%) followed by medium (33.34%) and small farms (32.76%).

The occupational structure of sample households has significant bearing on the socio-economic conditions. As such, the proportion of households engaged in agriculture is 89.65 per cent on small, 80.96 per cent on medium and 66.67 per cent on large farms. Taking together at total farms are 83.00 per cent. This means that agriculture is the main activity for majority of the households and thus, the main source of livelihoods for the rural people. Further the data on social groups showed that the maximum are from other castes (General). It is 65.00 per cent at the total farms. However, it is higher on large farms (85.71%) followed by medium farms (61.90%) and small farms (58.61%). All Scheduled Castes households (4%) are small. The intermediary castes or other backward castes are 31.00 per cent at the total farms. It is higher on medium farms (38.10%), followed by small farms (34.49%) and large farms (14.29%). It revealed that cultivation of horticultural crops is mainly done by large and medium farms and belonged to other castes (general) and other backward castes.

The age composition of sample farm households can also be noted from the table No. 4.1. The total family members are reported to be 712 persons. The average family size at the total households' level is 7.12 persons. However, it increases with the increase of farm sizes. The results of the livestock units per farm indicate units per farm indicate that as the size of holding increases the number of almost all the types of animals increase. This means that smaller the farm size, lesser the number of animals. There is much importance in cultivation of fruits from the income generation point of view. It can be noted that the income from all the sources is positively co-related to the size of farms. The average annual income per farm from all the sources is Rs. 40752, Rs. 65593 and Rs. 68388 on small, medium and large respectively. Taking together it is Rs. 51701. It reveals that income increases with the increase in the farm size.

Table No. 4.1: Basic Data of Sample Households in Bihar

SN	Particulars	Small	Medium	Large	Total
i.	No. of Households	58	21	21	100
ii.	Avg. Size of Farms (ha)	1.20	2.52	5.22	2.33
iii.	Level of Education				
	Illiterate	4 (6.90)	3 (14.29)	2 (9.53)	9 (9.00)
	Primary	22 (37.94)	8 (38.09)	9 (42.85)	19 (19.00)
	Secondary	19 (32.76)	7 (33.34)	8 (38.10)	34 (34.00)
	Graduation & above	13 (22.40)	3 (14.28)	2 (9.52)	18 (18.00)
	Total	58 (100.00)	21 (100.00)	21 (100.00)	100 (100.00)
iv.	Occupational Pattern				
	Agriculture	52 (89.65)	17 (80.96)	14 (66.66)	83 (83.00)
	Business & Trade	4 (6.90)	1 (4.75)	3 (14.28)	8 (8.00)
	Service	---	2 (9.54)	2 (9.53)	4 (4.00)
	Others	2 (3.45)	1 (4.75)	2 (9.53)	5 (5.00)
	Total	58 (100.00)	21 (100.00)	21 (100.00)	100 (100.00)
v.	Social Group				
	Scheduled Castes	4 (6.90)	---	---	4 (4.00)
	Scheduled Tribes	---	---	---	---
	Other Backward Castes	20 (34.49)	8 (38.10)	3 (14.29)	31 (31.00)
	Others	34 (58.61)	13 (61.90)	18 (85.71)	65 (65.00)
	Total	58 (100.00)	21 (100.00)	21 (100.00)	100 (100.00)
vi.	Age-wise Composition of Sample Households				
	Child --- 0 to 5 years	31	25	27	83
	5 to 15 years	103	89	107	299
	Total	134	114	134	382
	Adult --- Male	126	34	27	187
	Female	102	21	20	143
	Total Family Members	362	169	181	712
	Family Size	6.25	8.05	8.62	7.12
vii.	Per Farm Livestock Unit				
	Milch	0.40	0.42	0.71	0.47
	Draught	0.22	0.17	0.32	0.23
	Others	0.14	0.19	0.29	0.19
	Total	0.75	0.77	1.31	0.88
viii.	Per Farm Annual Income (In Rs.)	40752	65593	68388	51701

In parenthesis percentage figures are shown.

Method and Practice of Cultivation (Mango)

Mango, the kind of the fruits, is grown for over hundreds of years and more than dozen of varieties in the district. The popular varieties are *Dudhia Maldah, Zardalu, Bombay, Gulabkhaas, Bharatbhog, Fazli, Malikka, Amrapali, Biju,* etc. Bombay is one of the earliest varieties, *Zardalu, Gulabkhaas, Malikka, Amrapali,* etc. are mid season mango whereas *Fazli, Biju* etc. are late maturing mango. *Jardalu* is a very short time variety of mangoes. As regards the method and practice of cultivation of mango in the district is concerned, it is almost traditional and practice adopted for its maintenance is annual.

As is evident from the table 4.2 the average age of mango orchard is 23 years 6 months in case of the households enquired for the purpose of TMC and 30 years 4 months for EMC. So the maintenance of these orchards is almost on annual basis. During November-December, first of all around the mango trees ring basins of 2′ to 3′ radius x 1′ to 2′ deep are prepared thereafter mannuring and fertilization in the basin's soil are done. Further in February and March months spraying is made. Besides, irrigation is also provided in some intervals, which requires mainly on the soil heating conditions. Tube well and well is the main sources of irrigation.

Storage is an important marketing function, which involves holding and preserving the produce from the time they are harvested until they are consumed. As regards the storage of mango crop is concerned in the district, it has no formal structures in the area. Farmers have to store/place their produce in the orchard sometimes for a few days, waiting for packing and arrival of truck(s) for selling the produce in big cities market. Sometimes they carry the produce to their home for storing stocks till the selling is negotiated with the traders or retailers. In nutshell, there is no any permanent collection centres/forwarding points in and around the region.

Economics of Cultivation

In a study on marketing of fruit (mango) it is important to know whether product is economically beneficial or not. This may be done with the help of analysis of economics of cultivation. Following the cost concept method and cost structure in

cultivation of mango crop includes operational cost and fixed cost. The operational cost comprises inputs like fertilizer, pesticides/medicines, irrigation, human labour, etc. and fixed costs refers to interest on working capital, rental value of land etc. The cost estimated on this basis for mango crop is presented in table No. 4.2, 4.3 and 4.4. The results presented in table No. 4.2 indicate that the total production cost is Rs. 9503.05 per hectare in case of TMC households and Rs. 9037.95 per hectare in case of EMC households. Fertilizer, watch and guard, human labour is the major costs among the total costs in both i.e., TMC and EMC. The total production cost stood at Rs. 9503.05 /ha and Rs. 9037.95/ha on TMC and EMC farmers respectively. While analyzing the production and returns the data showed that the volume of production is 48.50 qtl./ha and 50.20 qtl/ha in TMC and EMC farms respectively. Out of it the wastage is 3.39 qtl/ha on TMC and 3.65 qtl/ha on EMC farms and the quantity consumed at home or domestic consumption is 4.36 qtl/ha and 5.10 qtl/ha respectively. Since mango is a seasonal and delicious fruit so it is also consumed by the members of the producer households. Finally the volume of the marketed surplus is 40.75 qtl/ha and 41.45 qtl/ha on TMC and EMC farms respectively. Taking together wastage and home consumption marketed surplus accounts for 84.03 per cent and 82.64 per cent of total production on TMC and EMC farms respectively. Per hectare fixed cost is estimated at Rs. 13164 in case of TMC, households whereas that of Rs. 13308 in case of EMC households. Total marketing cost stands at Rs. 812.00 per hectare and Rs. 3415.00 per hectare in TMC and EMC respectively (table 4.4). The economics of mango production in terms of costs and net return, the results indicate that the overall cost of cultivation and gross return are Rs. 23479.05/ha and Rs. 59984.00 per hectare resulting in net returns of Rs. 37316.95 per hectare in case of TMC households whereas those are 25761.45/ha and Rs. 76682.50 /ha resulting in net returns of Rs. 54336.55/ha in case of EMC households. The results further indicate that the Cost Benefit Ratio (CBR) among TMC households is 1:2.56 whereas that of among the EMC households is 1:2.98. It clearly revealed that the returns are higher among the EMC households.

Table No. 4.2: Per hectare Annual Operational Cost and Return of Cultivation of Mango in Bhagalpur District (Bihar)

SN	Particulars	TMC	EMC
i.	Average No. of Trees (Per ha)	68.42	67.50
ii.	Average area under the crop (ha)	0.80	0.82
iii.	Average Age of Mango Orchard (Yrs)	23.6	30.4
iv.	Inputs		
	Ring Basin Preparation (In Rs.)	840.00	812.70
	Fertilizer (In Rs.)	1120.50	1135.00
	Pesticides (In Rs.)	545.25	512.00
	Irrigation (In Rs.)	612.30	592.75
	Watch & Guard	2280.00	1770.00
v.	Cost		
	Human Labour (In Rs.)	2320.00	2395.00
	Other Paid out Cost (In Rs.)	1785.00	1820.50
	Total Production Cost (In Rs.)	9503.05	9037.95
vi.	Production & Return		
	Total Production (Qtl)	48.50	50.20
	Wastage (Qtl)	3.39	3.65
	Home Consumption (Qtl)	4.36	5.10
	Marketed/Sold (Qtl)	40.75	41.45
	Selling Price (Rs./Qtl)	1472.00	1850.00
	Gross Return (In Rs.)	59984.00	76682.50

Table No. 4.3: Per hectare Total Fixed Costs (In Rs.)

SN	Particulars	TMC	EMC
i.	Interest on Working Capital	852.00	892.00
ii.	Rental Value of Owned Land	12312.00	12416.00
	Total Fixed Cost	13164.00	13308.00

Table No. 4.4: Per hectare Costs and Returns (In Rs.)

SN	Particulars	TMC	EMC
i.	Total Fixed Cost	13164.00	13308.00
ii.	Total Operational Cost	9503.05	9037.95
iii.	Total Marketing Cost	812.00	3415.50
iv.	Total Cost	23479.05	25761.45
v.	Gross Return	59984.00	76682.50
vi	Net Return	37316.95	54336.55
vii.	Cost-Benefit Ratio (CBR)	1:2.56	1:2.98

Post-harvest Losses

The total post harvest losses in both the channels i.e., TMC and EMC hovers around 10.00 per cent of the total produce comprising 4.50 per cent at the farm, 2.25 per cent at ripening/storage and 3.25 per cent supply chains. At the farm level small and

immature fruits (66%) and fungal disease in fruits (23%) resulted into losses. The harvesting injury accounted for about 8.00 per cent of field losses. The transit injury from field to the storage place was almost negligible. The major causes for losses during storage and ripening were bruising injury and fungal disease. While marketing the produce damages occur in packaging and transportation. In case of TMC it is rather more than EMC. However, marketing of the produce in a distant market, packaging gets due attention. The sample households were of the view that lack of assembly market causes more hardship in marketing the produce. A developed market chains right from assembly market to terminal market may reduce the losses and enhance the share of farmers.

Services Availed

As regards the services, availed by the sample households of TMC and EMC are concerned, it is credit only. Credit is provided by the pre-harvest contractors/traders to orchard owners particularly to ensure the contract for ensuing season of the crop and sometimes for 2 to 3 crop year. Out of 100 sample farms 23 have taken the loan. Out of total loanees, 13 belong to TMC and 10 EMC categories. Small farmers have availed at larger scale. None of the sample farms have got credit from any of the formal lending institutions. Most of the households have taken the loan to meet the family and social obligations. The average number of loan obtained by the sample households is 2.1 and the value of the amount is Rs. 4425 among TMC households whereas that of 2.3 and Rs. 3870 among EMC households.

Market Infrastructure

Market infrastructure includes condition of the roads to the market, distance of the market, storage facilities, auction, weight and measurement, supervision and the most important safety and security. So far as the marketing regulations in Bihar are concerned, it has already been stated in earlier chapters that Bihar State Agriculture Produce Marketing Committees Act (BPMC Act) has already been repealed in the 2006 and since then free marketing of agricultural commodities is in practice. I mean there is no regulated marketing system in the state. In the circumstances any formal facilities relating to the infrastructure is not available. Farmers of TMC use to sell

their produce in nearby market (within 10 kms) through the pre-harvest contractors/wholesalers/retailers/traders whereas in EMC group, farmers sell their produce in group and in distant urban market through the traders (local). The distant urban mandies are well equipped where by paying commission charges @ 8 to 10 per cent, produce is sold. Moreover, the road condition has been improved in the state. Storage facilities for Mangoes or any other fruits are not available in the area.

Farmer's Perception

Farmers' perception has also been recorded to capture the qualitative aspects of marketing of the fruits particularly the mango. We wanted to know about the number of agents after the buyer and the number of channels between the producer and the retail market. In response to this it was found that there are three important agents in marketing of mangoes in TMC. These are pre-harvest contractors, wholesalers and retailers/hawkers. However, 04 marketing channels have been identified for the purpose of marketing the produce, which have already dealt in Chapter-II. Similarly among EMC households, there are 03 agents such as traders (local), wholesalers and retailers. In regard to the selling the produce in wholesale markets, household among the EMC category reported that they mainly sell their produce in urban mandies of three states namely: West Bengal, Jharkhand and Uttar Pradesh. While asking about the knowledge of selling price of their produce in the retail markets, they were of the view that they almost know it.

It becomes almost double times the prices at which they dispose off their produce. The margin earned by the buyer is much high in respect of their involvement in the deal, they felt. But they are helpless in absence of any other option wherein they could get higher price for the produce. They were of the view that the government should facilitate the producers by developing modern marketing structures like assembly markets to terminal markets with all infrastructural facilities. In lack of such facilities producer suffers a lot like poor transportation system, lack of cold storage facilities, lack of refrigeration van at reasonable freight rates, untimely payment, lack of other on farm facilities etc. These constraints can be removed only

when a developed marketing structure is made with backward and forward linkages.

Information Costs

It is quite natural that the farmers wish to get best possible price for their produce for which they must be aware of ruling market prices in the market where they sell their produce. If he/she gets information in time, the decision in regard to selling of the produce will be accordingly. So far as the information system of mango growers is concerned it may be seen from the table 4.5 as below:

Table No. 4.5: Details about the Information Costs (Mango) – In %

SN		Particulars	TMC (N=50)	EMC (N=50)
A		Source of Price Information		
	i.	Personal information	22.00	12.00
	ii.	Speaking with other farmers	38.00	20.00
	iii.	Speaking with commission agent/trader	26.00	56.00
	iv.	Speaking with E-Choupal Agent	0.00	0.00
	v.	Others (Relatives, Friends, arhatiyas, etc)	42.00	40.00
B.		Time of Price Information		
	i.	At the time of harvest sale	82.00	58.00
	ii.	After the sale	26.00	42.00
	iii.	>1 months & <3 months of harvest	0.00	0.00
	iv.	3 or more months after harvest	0.00	0.00
C.		AGMARK NET	0.00	0.00
D.		Difference in Price Information		
	i.	Lower than expected	48.00	44.00
	ii.	Similar to what expected	42.00	38.00
	iii.	Higher than expected	10.00	18.00
E.		Time of Price Agreement		
	i.	At the time of sale	100.00	66.00
	ii.	By previous agreement	0.00	34.00

Source: Primary data

Above table reveals that farmers did have information about the price prevailing in the markets. In case of mango, speaking with others (42%) in traditional marketing channel (TMC) is one of the important sources of price information followed by other farmers (38%), traders (26%) and personal information (22%). Most of the farmers get about the price information at time of sale (82%). Less than half of the sample farmers reported that they get the price similar to what they expected. Similarly among the EMC farmers, speaking with traders (56%) is the major source

of price information. Majority of EMC farmers get price information at the time of sale (58%). By and large sample farmers revealed that the price received by them is lower than expected (44%).

Enforcement Costs

As discussed earlier in case of TMC the farmer sells his produce through pre-harvest contractor who acts between the farmer and the buyer. Similarly in case of EMC, the farmers sell his produce in urban mandies through local trader. In order to observe this the farmers in our sample were interrogated about their experience with market intermediaries. This enforcement cost is indicated in table below:

Table No. 4.6: Details of Enforcement Costs (Mango) – In %

SN		Particulars	TMC (N=50)	EMC (N=50)
A		Difference between Sale & Agreed Price		
	i.	Less	20.00	10.00
	ii.	Same	80.00	90.00
	iii.	A bit more	0.00	0.00
B.		No. of Times went to Merchant to get payment		
	i.	None	76.00	78.00
	ii.	Various times	24.00	22.00
C.		Merchant/Trader Fulfillment		
	i.	Bad record	12.00	0.00
	ii.	Satisfactory record	78.00	92.00
	iii.	Good record	10.00	8.00
D.		Receipt for sale		
	i.	No	88.00	40.00
	ii.	Yes	12.00	60.00
E.		Conflicts on Quality		
	i.	No	76.00	88.00
	ii.	Yes	24.00	12.00
F.		Any other conflicts		
	i.	Size of crop	42.00	0.00
	ii.	Stage of repining	36.00	40.00
	iii.	Payment modes	32.00	60.00
G.		Resolving Response		
	i.	Negotiation	100.00	12.00
H.		Confidence in the Merchant/Trader		
	i.	Low	48.00	56.00
	ii.	High	52.00	44.00

Source: Primary data

Intermediaries in TMC and EMC

In TMC, the main intermediary is pre-harvest contractor who buys the orchard usually @ Rs. 1000 to Rs. 3000/ tree at the time of flowering or sometimes before the flowering, whereas that of in EMC is trader (local), who invests on purchase of the produce. Sometimes he provides credit to the orchard owners in need and in lieu that he also takes the tree (gachi) for 1 to 3 years. So, in TMC the pre-harvest contractor who bought the produce in secret way? They harvest the produce as according to the ripening of the produce and used to sell in nearby market (unregulated) where they sell the produce through the retailers/hawkers and sometimes wholesalers. The average cost of marketing is @ Rs. 20.30/quintal, which they borne on selling the produce (table 4.5). These contractors have the knowledge of price of the produce from the local market. They simply harvest the produce and sell it to the market in raw form. Processing of the produce was not reported by any of the sample households of TMC category. In fact they don't have safe storage facility. Sometimes they store the produce for some days in an open place are it at farm or home. While asking about the constraints they reported hardship in finalizing the deal almost on annual basis or up to 3 years. They reported that the producer is always in comfortable position. Producer takes the money at the flowering stage, which is an early stage wherein estimates of the produce can not be perfect rather a high fluctuation might be seen, causing high risk in purchasing the trees (gachi). Besides, after making the contract the management of the orchard lies on the contractors who again rely on the producers particularly on security and other reasons. So they argue that this is a kutcha business with full of risks and uncertainties. Moreover dealings with other agents, like labour, transporters and retailers are also not convenient. Thus, they are of the view that modern markets should be constructed with all infrastructural facilities.

In case of EMC, trader (local) is the main intermediary who usually do not purchase the gachi (tree) rather facilitate the producers seller to sell the produce in big markets and sometime they also buy the produce for which they make advances to the orchard owners for ensuing crop. Their business is just like post-harvest contractor who pick-up the produce from the farm gate and sell the produce in big mandies to

get a good margin out of the sale. These traders have no trading places and other infrastructures rather they buy the produce in most of the time in credit and pay the producer after selling the produce in big markets or specialized markets. They usually buy the produce in a very simple transaction and unspecified interval. The marketing cost of the produce is estimated at Rs. 85.35/qtl. The data presented in table 4.7 showed the marketing costs on both the channels. In EMC, cost of transportation accounts for nearly 47.55 per cent followed by mandi tax (33.68%), commission charges (9.72%) and loading and unloading charges (9.14%).

Table No. 4.7: Cost of Marketing of the Produce (Mango) for the Buyer *(In Rs./qtl).*

SN	Costs	TMC	EMC
1.	Loading & Unloading	5.10 (25.12)	7.80 (9.14)
2.	Transportation	15.20 (74.88)	40.50 (47.45)
3.	Commission Charges	NA	8.30 (9.72)
4.	Mandi Tax	NA	28.75 (33.68)
	Total Cost	20.30 (100.00)	85.35 (100.00)

In parenthesis percentage figures are shown

They sell their produce in open auction, while asking about the constraints faced by then in procuring and marketing of the produce, they said that they face constraints at different levels right from purchasing of the produce to selling of the produce. Some times in lack of capital they do not purchase the large quantity of the produce at least of the capacity of full loaded truck. In the circumstance they arrange the deal with the producers on post payment basis, which completely depends on the faith won by the traders over the producers. This is relating to the business performance of the traders which is difficult to render before producers' level. Transporter charges higher cost of transportation due to having the perishable nature of the produce and timely reaching in the mandi.

In addition to these there is throughout risks and uncertainties unless and until the traders return their places safely after disposing the produce. As regards the marketing of the produce in big mandies is concerned, it is also difficult because local brokers/arhartiyas/commission agents try to influence the traders, who come

from a distant place. In nutshell, to sell the produce in far away market is full of difficulties. So they suggest to construct and the develop markets locally for which a full package of market development scheme is required to be initiated at the earliest.

Box – I: Traders in Emerging Marketing Channel

The 'trader' has emerged as a new chain in marketing of fruits in Bihar mainly because of lack of organized markets or infrastructural facilities for marketing the produce. He works in two ways --- first, leasing in the trees (mango) either on annual basis or for a period of one to three years @ Rs. 1000/- to Rs. 2000/- per tree/year mainly because of absentee producers, secondly, uses to take the responsibility for selling the produce in distant urban mandies/market also of local producers. In both the cases, after harvesting the produce, he makes arrangement for sorting, grading and packaging the produce. While discussing the process of marketing with them for last year, it was found that he pays transportation cost incurred in marketing the produce at Kolkata mandi @ Rs. 18,000 per truck which carries 300 tokaries (baskets) containing 100 pieces of mangoes in each tokary and rush to mandi by undertaking overnight journey from the village. He sells the whole produce in the mandi, for which he is charged mandi charges @ 8.00 per cent of the sale proceeds. After selling the produce, he comes back to village with Bank Demand Draft or sometimes, cash also, which is very risky and uses to pay the amount after deducting the costs of marketing etc. and his own margin for selling the produce i.e., trader's margin as per the volume or quantity of the produce given to him for sale. On account of trading the produce on an average he gets 13.22 per cent of the producer's share, as revealed from the analysis.

Retail Market

The retailing of mangoes is a seasonal business and thus, its market is not of permanent nature rather in temporary structures and spread in many blocks. Due to its scattered nature, no market rules are there. Prices are arbitrarily set as according to the areas wherein the market is located and its hinterland purchasing capacities. These markets are nothing but roadside market, where retailers occupy the area for their counters on first come first get basis. There is not any record of physical volumes which they used to sell per day or selling of a season. They don't pay any taxes and fees in lieu of selling the produce. Since Bihar Agriculture Produce Marketing Act is not in existence in state and so marketing of any agricultural produce is free. In course of study, we have tried to capture the quantitative figures of 15 retailers of TMC from the retail markets of Nathnagar and Tilkamanjhi in Bhagalpur City. Three retailers get the produce from adjoining areas of 10 to 20 kms. Out of the 15 sample retailers 12 (80%), have operated for 3 months (June to August) and 3 (20%) for 3 and ½ months (15th May to Aug) during the reference year of 2009-10. They on an average purchased 32.50 qtl. for which they paid a total sum Rs.

46358/- i.e., Rs. 1426.40/qtl. Out of the total purchase they sold totally but on different prices ranging between Rs. 40/ kg to Rs. 18/kg in light of quantum of arrivals of the mangoes and its quality. While asking about the prices on which they sell their produce, they said the market is very competitive and fluctuates on quantum of arrivals of the produce as well as varieties available for the sale. They definitely demand MRP (Maximum Retail Price) from the customers but the customers pay what existing prices are there. The scope of bargaining due to perishability of crop and increase in market arrivals is limited. Moreover, they said that the retailing of mango is a kutcha business and so the margins are always fluctuating.

They have also reported several constraints, which they face in purchasing and selling both. Storage problem (86.67%), lack of capital (73.33%), changing of place due to having large number of retailers and their strength (40%), prices are influenced by retailers of large stocks (46.67%), local taxes collected by unauthorized way (53.33%), problem of selling in open sky (40%) etc. To overcome these problems, they suggested for construction of pucca roofed market with basic infrastructural facilities particularly the storage and transport facilities at different places even on some payment basis.

JHARKHAND

Farmers' Profile

Table 4.8 presents the details of the sample households in the selected district. The figures show that average size of farm on small, medium and large is 1.75, 3.0 and 6.25 ha respectively. However, it is 3.05 ha at overall level. This shows the possibility of the economic viability of majority of the farms. Education is one of the important indicators of the social base of the households because it plays a crucial role in modern cultivation practices. The cultivation and marketing of commercial crops like vegetables needs special attention for obtaining better productivity and margins. In this regard, it can be noted that there is very low level of illiteracy among the sample farms. At the overall level only 9.00 per cent of the sample households are illiterate. About 81.00 per cent of the sample are up to the secondary

level and 11.00 per cent are graduates or above. Farm wise figures are almost in same trend.

The occupational structure also reveals that 79.00 per cent of the total households are engaged in agriculture at the overall level. It is higher at 86.67 per cent on small farms, 78.94 per cent on large farms and 69.45 per cent on medium farms. It shows that agriculture is pre-dominant occupation and the main source of livelihood in rural areas of Jharkhand state. Further data on social group reveals that the share of other backward castes (69%) is higher followed by general/other castes (22%) and scheduled tribes (9%). Small farms constitute 64.45 per cent by other backward castes, 20.00 per cent general castes and 15.55 per cent scheduled tribes. The proportion of scheduled tribes is higher on small farms. Other backward castes constitute 94.74 of the total sample among the large farms followed by general (5.26%). It clearly revealed that cultivation of vegetables is mainly done by other backward castes on any size of farms.

The age wise composition of sample farms reveals that out of total households members (476 persons), children belong to 209 heads (43.91%) and of the 209 heads 82 (39.23%) belonged to the age group of 0-5 years and 127 (60.77%) 5-15 years. 267 persons (56.09%) are reported from adult category. The average family size is 4.76 persons at the overall level. It is 4.88 persons on small, 4.72 persons on medium and 4.53 persons on large farms. It revealed that the average family size is not high rather it is at the optimum scale.

The results of the total live stock units per farm indicate that it is 0.43 heads, however, it is high at small (0.55 heads) followed by 0.55 heads on medium farms and 0.27 heads on large farms. In case of milch animals it is just 0.14 heads at the overall level. It finds that the livestock farming has become costly and to some extent less profitable so it's holding sizes is declining, as also evidenced from table 4.6.

The average annual income per farm from all the sources is Rs. 47701/- on overall level. It is Rs. 42750/- on small, Rs. 47325/- on medium and Rs. 60140/- on large farms. In fact it increases with the increase of farm sizes.

Table No. 4.8: Basic Data of Sample Households in Jharkhand

SN	Particulars	Small	Medium	Large	Total
i.	No. of Households	45	36	19	100
ii.	Avg. Size of Farms (ha)	1.75	3.00	6.25	3.05
iii.	Level of Education				
	Illiterate	6 (13.33)	2 (5.55)	---	8 (8.00)
	Primary	11 (24.44)	14 (38.89)	9 (47.36)	34 (34.00)
	Secondary	23 (51.11)	16 (44.44)	8 (42.11)	47 (47.00)
	Graduation & above	5 (11.12)	4 (11.12)	2 (10.53)	11 (11.00)
	Total	45 (100.00)	36 (100.00)	19 (100.00)	100 (100.00)
iv.	Occupational Pattern				
	Agriculture	39 (86.67)	25 (69.45)	15 (78.94)	79 (79.00)
	Business & Trade	4 (8.89)	6 (16.67)	2 (10.53)	12 (12.00)
	Service	---	3 (8.33)	2 (10.53)	5 (5.00)
	Others	2 (4.43)	2 (5.55)	---	4 (4.00)
	Total	45 (100.00)	36 (100.00)	19 (100.00)	100 (100.00)
v.	Social Group				
	Scheduled Castes	---	---	---	---
	Scheduled Tribes	7 (15.55)	2 (5.55)	---	9 (9.00)
	Other Backward Castes	29 (64.45)	22 (61.11)	18 (94.74)	69 (69.00)
	Others/General	9 (20.00)	12 (33.34)	1 (5.26)	22 (22.00)
	Total	45 (100.00)	36 (100.00)	19 (100.00)	100 (100.00)
vi.	Age-wise Composition of Sample Households				
	Child --- 0 to 5 years	49	28	05	82
	5 to 15 years	56	44	27	127
	Total	105	72	32	209
	Adult --- Male	62	56	24	142
	Female	53	42	30	125
	Total Family Members	220	170	86	476
	Family Size	4.88	4.72	4.53	4.76
vii.	Per Farm Livestock Unit				
	Milch	0.14	0.22	0.18	0.14
	Draught	0.19	0.16	0.17	0.12
	Others	0.22	0.17	0.19	0.17
	Total	0.55	0.50	0.27	0.43
viii.	Per Farm Annual Income (In Rs.)	42750	47325	60140	47701

In parenthesis percentage figures are shown.

Method and Practice of Cultivation (Cauliflower)

Cauliflower *(Brassica Oleracea var. botrytis)* is the most popular vegetable among Cole crops. It is a delicate crop and needs more care to grow successfully than most other vegetables. The cauliflower varieties are very responsive to temperature and photoperiod. It is, therefore, very important to chose the right variety to be sown at the right time. Broadly cauliflower varieties can be grouped as early, mid season and late. Early variety - kunwari is available from June to October, mid season - snowball is available from mid-November to mid-March and late variety late snow ball from March to June. Cauliflower produces best curds in a cool and moist climate. The seed is sown in raised nursery beds. The seed rate for early variety is 600 gm to 700 gm/ha. The seedlings are transplanted when 4 to 6 weeks old, depending on the season in a well prepared field. In this regard it is to be clear here that climate of Ranchi district in very congenial for vegetables' production. The district produces vegetables in all round the year mainly because of favourable climatic conditions of the district and so, cauliflower is grown in the district in all the seasons. The average number of plants is reported to be 20,250 in TMC and 21100 in EMC category of farms. Field is prepared with large quantity of manures and thereafter seedlings are transplanted. After two weeks fertilization is being done. Plant protection materials are also given. Irrigation as per the availability of moisture contest in the soil is provided mainly through the well and tube well sources.

After 60 days of transplantation the cauliflower is harvested depending up on the size of the curds and colour. The usual method of packing and transport of cauliflower is in big nets and trucks. Cauliflower with leaves attached can be stored for 30 days at 0^0C with 85 to 90 per cent relative humidity. The produce is marketed almost from the farm. In the study area traditionally it is common but in case of emergence of Reliance Fresh (RF) in vegetables' marketing, storage provision is available at its collection centre (Pithoria). Besides storage at collection centre, there are 28 SKUs (Stock Keeping Units) at the village level with in the catchment area of Pithoria collection centre, Kanke Block, Ranchi. In nutshell, there is a storage facility

for the produce of EMC group of farms. But in case of TMC there is no storage facility either level.

Economics of Cultivation

Following the cost structure in cultivation and production of cauliflower, this includes cost of production as well as fixed cost. The cost estimated for cauliflower has been presented in table numbers 4.9, 4.10 and 4.11. The operational cost refers human labour, field preparation, seeds/seedlings, manures, fertilizer, plant protection materials, irrigation and other paid out costs. The fixed cost includes interest on working capital and rental value of land. In case of cauliflower, the overall cost of production at TMC is estimated at Rs. 37050/ha whereas that of at EMC Rs. 36910/ha. Out of the total production costs, the production of the cost incurred on human labour (50.80%) is higher followed by manuring (11.40%), seeds (9.78%), fertilizers (7.60%), irrigation (5.26%), field preparation (5.00%) and plant protection materials (4.82%) at TMC farms whereas that of 47.00 per cent on human labour, 12.21 per cent on manuring the field, 9.62 per cent on seedlings, 7.97 per cent on fertilizers, 7.11 per cent on other paid out cost etc. on EMC farms. It reveals that labour, manure and seed are major components of the production cost on both the marketing channels. Further the production is estimated at around 220 quintal and 222 quintal at TMC and EMC farms respectively. The marketed surplus of the quantity produced is estimated at 207.50 quintal at TMC farms and 208 quintals at EMC farms. The selling price is around Rs. 385 to 390/quintal. The gross return out of sale of marketed surplus has been calculated at Rs. 79887.50/ha at TMC farms and Rs. 85280 at EMC farms. Per hectare total cost has also been estimated which are indicated in table 4.8. It showed that the total fixed cost is Rs. 8400/ha and Rs. 7775/ha at TMC and EMC farms respectively. Taking together, the operational cost or production cost, fixed cost and marketing cost, the total cost at TMC farms is Rs. 50866/ha and Rs. 44685/ha at EMC farms. These results indicate the Cost Benefit Ratio (CBR) is 1.57 at TMC and 1.90 at EMC farms. The analysis presented above for Ranchi district, by and large, reveals that the production of cauliflower is remunerative and has large potential of employment. Besides, the return is higher on EMC farms.

Post-Harvest Losses

Cauliflower is harvested when curds are compact, attain proper size and retain original colour. Delay in harvesting results in non-marketable, loose and discoloured curds. The plant is cut well below the curd with a sharp cutting knife, sickle or khurpi. The trimming of leaves depends upon the mode of packing and transportation. When packing is done in crates, most of leaves are removed leaving small portion. While transporting in gunny bags, the inner leaves covering the curd are left intact and outer leaves are removed. In loose transportation more number of leaves are retained and trimmed only after their unloading in the market. As regards the proportion of the cauliflower lost at farm level is concerned, it is 4.00 per cent in TMC and 2.75 per cent at EMC farms. Due to unsafe transportation, losses are also occurred on both groups of farms. But it is lesser on EMC than TMC group of farms. In TMC 6.25 per cent of losses are occurred due to poor transportation. Whereas that of 3.00 per cent on EMC. The lower losses at the EMC farms are due to owned transportation system of the corporate houses like Reliance Fresh. There are several reasons for losses. Among the TMC farms, the main reasons for losses are very competitive pricing of the produce in the local market (33%), lack of proper storage facilities (32%), fast decaying of quality after harvesting (30%), distant market (26%), lack of proper transportation facilities (22%) etc. Similarly, among the EMC farms lack of refrigerated van (42%), lack of storing facilities (38%), lack of trained labour (32%) etc. While asking about the steps to be taken for reducing the losses, TMC households are of the view that proper marketing facilities with developed infrastructure (48%), safe transportation facilities (38%), training to the labourers (22%) etc. will reduce the proportion of losses. Likewise, transportation facilities (32%), training to the labour (28%), marketing facilities (20%) establishment of processing units (16%) etc. will reduce the losses. These steps can not alone be met by the government itself rather a joint efforts of public and private partnership may play the vital role.

Table No. 4.9: Per hectare Cost of Cultivation, Production and Return of Cauliflower in Ranchi District (Jharkhand)

SN	Particulars	TMC	EMC
Average No. of Plants		20250	21100
Average area under the crop (ha)		3.34	3.30
Cost			
i.	Human Labour (Rs)	18820	17345
ii.	Field Preparation (In Rs.)	1850	1890
iii.	Seed/Seedlings (Rs.)	3625	3550
iv.	Mannure (Rs.)	4225	4508
v.	Fertilizers (Rs.)	2815	2945
vi.	Plan Protection Materials (Rs.)	1785	1890
vii.	Irrigation (Rs.)	1950	2155
viii.	Other Paid out Costs (Rs.)	1980	2627
ix.	Total Production Cost (In Rs.)	37050	36910
Production & Return			
	Total Production (Qtl)	220	222
	Home /Domestic Consumption (Qtl)	12.50	14.00
	Marketed/Sold (Qtl)	207.50	208.00
	Selling Price (Rs./Qtl)	385	410
	Gross Return (In Rs.)	79887.50	85280

Table No. 4.10: Per hectare Total Fixed Costs (In Rs.)

SN	Particulars	TMC	EMC
i.	Interest on Working Capital	7550	6875
ii.	Rental Value of Owned Land	850	900
	Total Fixed Cost	8400	7775

Table No. 4.11: Per hectare Costs and Returns (In Rs.)

SN	Particulars	TMC	EMC
i.	Total Fixed Cost	8400	7775
ii.	Total Production Cost	37050	36910
iii.	Total Marketing Cost	5416	0.00
iv.	Total Costs	50866	44685
v.	Gross Return	79887.50	85280
vi.	Net Return	29021.50	40595
vii.	Cost-Benefit Ratio (CBR)	1:1.57	1:1.90

Services Availed

Since scale of vegetables' marketing in Ranchi district is very large and it is being performed at several places. There is abundance of production of vegetables in the district. Buyers come across the regions and out side the state also. In course of study it was found that the sample producers of either group have not availed any services or help from the buyers' side. Credit is important for the cultivators, which they manage at their own levels. Out of the total farms of TMC group, only 11 have reported that they have taken loan from the local people @ 3 to 5 per cent/month.

They have neither approached to any formal lending institutions nor have the institutions offered any specific programmes for this. Except this they have not borrowed anything from anywhere. The average borrowings are reported to Rs. 2525. In case of EMC farms, buyer is Reliance Fresh, which did not pay any credit to the vegetables' producers rather listed the names of the growers in their working area, who have the marketable surplus of different vegetables. RF procures the vegetables from their farms on daily basis but on different routes in their operational area. In the study area, the total availability of the cauliflower at different stock keeping units, which are 28 in the catchment area (22 villages) of RF collection centre, is as below:

Table No. 4.12: Availability of Cauliflower at Pithoria Collection Centre of Reliance Fresh

Months	Qty (In MT)	Months	Qty (In MT)
January	100	July	05
February	100	August	10
March	100	September	50
April	50	October	100
May	10	November	100
June	05	December	100
Total			**730**

Source: C C Reliance Fresh Ltd., Pithoria, Ranchi

Moreover, out of 50 EMC farmers, 17 have reported that they have obtained credit from the local persons and fertilizers' shopkeepers. Out 17, 4 have taken fertilizer on credit without interest. They have obtained it on personal rappo. About 13 sample farms have obtained credit from the local people @ 3 to 6 per cent per month of interest. The average amount of borrowings is reported Rs. 3450.

Market Infrastructure

It has been observed that very small portion of vegetables production is retained by the growers for meeting requirements of seeds, family consumption, kind payment to labourers and other uses. The remaining produce is marketed. It is further observed that for the purpose of vegetables there are no scientific storage facilities and traditional method involve a lot of wastage. The growers, therefore, try to market their vegetable produce as soon as possible. As stated earlier that Ranchi has large potentialities where vegetables are not only marketed in local market but also marketed to other states such as Bihar, West Bengal and Orissa. At the producing

centres the vegetables are collected in respective local periodical markets and from these markets often known as 'haats' these are purchased by a number of intermediaries. In fact the entire process is performed under open sky. There is no marketing infrastructure even these sales are under regulated marketing system. TMC households also sell their produce in nearby periodical markets without any infrastructural facilities. However, EMC households sell their produce at the farm level where the staff of the RF visit to procure and carry the produce from the farm, which are being again measured at the collection centre and then recorded in the name of the producer seller. So these households have the facilities of transportation, weight and measurement, storage etc. from the RF retails.

Farmers' Perception

For vegetables farmers' perception is not consistent because there are wide variations in conditions under which vegetables are marketed. Depending upon the channel through which, and the form in which, vegetables enter the markets, the producer-seller get varying returns for their produce. Further price spread varies according to nature of perishability of vegetables and type and location of market. The mode of sale, weighment facilities, packaging practices etc. are always in favour of the buyers. The cost of marketing varies widely due to distance of the market. This is the situation of the traditional system of marketing of the vegetables. In case of emerging system, which is managed by Reliance Fresh Retailing Ltd., is somewhat clear but its pricing is not alike the open marketing system or on demand supply rules. So the sample households of either group are of the view that the terms either selling through TMC or EMC are always in favour of the buyers. The producer-sellers have little option to go beyond their rules. As regards the market agents between the producer and consumer, there are 2 to 3 agents in TMC group, whereas in EMC, the chain is of RF itself, which are clearly explained in chapter – three through the charts. While asking about the margin that the buyer earns from the sale, they were of the view that sometimes it is double the profit earned by the producer-seller and sometimes it is lesser but always higher to the producer's margin. It can be minimized only when the chains of the vegetables marketing is shortened. The EMC households are of the view that corporate houses can not share

their margins with the producers rather their motive is maximizing the profit. In the circumstances, if vegetables' co-operative societies at the primary level are strengthened with basic infrastructural facilities and marketing linkages, then the suffering of the vegetables growers can be removed. Since vegetables are viewed as 'sunrise' enterprise in the agricultural sector due to its vast potentialities of its production but on account of its perishability and poor market infrastructure facilities, its production and marketing efficiency is poor. It could be increased with the help of multipronged strategies within the framework of market reforms programme and of course, the overriding priority.

Information Costs

Obviously, information costs' implications in agricultural marketing are paramount. It is necessary to know the ruling prices in the market for the farmers so that they could plan to sell their produce accordingly. This will guide them regarding the proper time and place to dispose off their produce. In case of vegetables marketing, this study has also captured some qualitative view of the farmers on information, which is presented in table 4.13. The table reveals that the TMC farmers mainly get information from other sources like friends, relatives, collection centre of Reliance Fresh (RF) etc. (42%) followed by speaking with other farmers (36%), agents (28%) and personal information (12%). They get the price information mainly at the time of harvest (66%) and after a short while of the harvest (34%). In regard to prices they reported similar to what they expected (58%) and lower than expectation (42%). Majority of the get mutually agreed price at the time of sale (90%). Similarly in case of EMC farmers all of them get information from the sources of RF agency and at the time of harvest. Majority of them receive similar to what they have expected (82%).

Table No. 4.13: Details about the Information Costs (Cauliflower) – In %

		Particulars	TMC (N=50)	EMC (N=50)
A		Source of Price Information		
	i.	Personal information	12.00	0.00
	ii.	Speaking with other farmers	36.00	0.00
	iii.	Speaking with commission agent/trader	28.00	0.00
	iv.	Speaking with E-Choupal Agent	0.00	0.00
	v.	Others (RF etc)	42.00	100.00
B.		Time of Price Information		
	i.	At the time of harvest	66.00	100.00
	ii.	After harvest	34.00	0.00
	iii.	>1 month & <3 months of harvest	0.00	0.00
	iv.	3 or more months after harvest	0.00	0.00
C.		AGMARK NET	0.00	0.00
D.		Difference in Price Information		
	i.	Lower than expected	42.00	18.00
	ii.	Similar to what expected	58.00	82.00
	iii.	Higher than expected	0.00	0.00
E.		Time of Price Agreement		
	i.	At the time of sale	90.00	0.00
	ii.	By previous agreement	10.00	100.00

Source: Primary data

Enforcement Costs

In order to observe enforcement costs, the sample farmers were interrogated about their experience with market intermediaries who have been captured in table No. 4.14. The table shows that among TMC farmers there is little difference between the sale price and agreed price. But they have gone to traders various times (88%) to get the payment. The traders' obligation in fulfillment of trade is recorded satisfactory by 46.00 per cent; good record by 38.00 per cent and of course the bad by 16.00 per cent. All of them have got the payment. However, in some cases conflicts between them are reported. Similarly among EMC farmers, as stated earlier use to sell their produce to Reliance Fresh Retail shops through its collection centre. They also reported that there is little difference between the sale and agreed price. They did not visited to the doorsteps of the corporate office for getting the payment and the record of payment is also satisfactory (88%).

Table No. 4.14: Details of Enforcement Costs (Cauliflower) – In %

SN		Particulars	TMC (N=50)	EMC (N=50)
A		Difference between Sale & Agreed Price		
	i.	Less	14.00	12.00
	ii.	Same	86.00	88.00
	iii.	A bit more	0.00	0.00
B.		No. of Times went to Merchant to get payment		
	i.	None	12.00	100.00
	ii.	Various times	88.00	0.00
C.		Merchant/Trader Fulfillment		
	i.	Bad record	16.00	4.00
	ii.	Satisfactory record	46.00	88.00
	iii.	Good record	38.00	8.00
D.		Receipt for sale		
	i.	No	0.00	0.00
	ii.	Yes	100.00	100.00
E.		Conflicts on Quality		
	i.	No	38.00	100.00
	ii.	Yes	62.00	0.00
F.		Any other conflicts		
	i.	Payment modes	24.00	0.00
G.		Resolving Response		
	i.	Negotiation	24.00	0.00
H.		Confidence in the Merchant/Trader		
	i.	Low	46.00	12.00
	ii.	High	54.00	88.00

Source: Primary data

Intermediaries in TMC and EMC

In TMC, the marketed surplus is sold by all the sample farmers to either kutcha Arhatiya or agent of wholesaler/commission agent who buy cauliflower from the farmers in the rural haat/periodical markets. This means that rural periodical markets are the most important market place where majority of farmers sell their vegetables including the cauliflower. This also reveals the fact that there is least participation of farmers in the urban markets or bigger markets say specialized markets. It is being followed by village merchant/itinerant trader. The direct sale to wholesaler/commission agent by the farmers is very low and also varies considerably among the different farm size categories.

During the course of survey, it has been found that vegetables are not being bought or sold in the market yards in Ranchi. Besides, the co-operative institution as a

marketing agency namely VEGFED, now does not play any important role in marketing of vegetables. Very few liked to sell their vegetables directly in the main marketing centres due to difficulties in marketing their vegetables. From the foregoing analysis it reveals that the chains of intermediaries constitute the channels of marketing system. The intermediary incurred the cost of marketing on an average @ Rs. 28.35/quintal on selling the cauliflower. These itinerant traders/village merchant or kutcha arhatiya sell the produce to the wholesaler or commission agents who finally sell the produce to the consumers through retailers. So traditionally there are 3 intermediaries in marketing the cauliflower.

In case of EMC, all the sample households sell their produce to Reliance Fresh. Most of the farmers are able to save time, effort and money as they are not required to transport their produce to the wholesale markets, which in some cases are located 40-50 kilometres away from their villages. Reliance, on the other hand, has set up its procurement centres. There is one catch; however, vegetables in general being accepted by the Reliance arm are required to be graded based on their quality and freshness.

Table No. 4.15: Cost of Marketing of Cauliflower for the Buyers (In Rs./Qtl)

SN	Costs	TMC	EMC
1.	Loading and Unloading	6.10 (21.52)	Not Available
2.	Transportation	14.25 (50.26)	
3.	Commission Charges	8.00 (28.22)	
4.	Mandi Tax	---	
	Total Cost	28.35 (100.00)	

In parenthesis percentage figures are shown.

Though wholesalers/buyers refused to admit any impact of Reliance chains, there is no denying the fact that a quiet revolution is taking place in the villages as more and more farmers has started to see the benefits of selling their vegetables directly to retail chains. Efficient supply chains backed by superior logistic management, has the potential of saving 30-35 per cent in costs, particularly for perishable items like vegetables. And at the same time, government is getting improved tax revenue as

vegetables now taxed through the RF outlets (CS08-029, London Business School, version dated 21/10/2008).

Retail Market

Retailing of vegetables involves storing, cleaning and dressing of vegetables. These practices are being done by the retailers to some extent before selling to the consumers. In case of cauliflower in Ranchi district is concerned, it is almost true. During the course of survey, it was observed that farmers do not follow the scientific post-harvest management such as proper grading, cleaning, packaging practices etc. before selling. So retailing or retail market of cauliflower is complex. It begins from the purchase made by the retailers and till it reaches in the hands of consumers. Since storage is very important for keeping the cauliflower fresh but it lacks too resulting to wastage, which increases the selling prices of the retailers. For the purpose of this study, 15 retailers of TMC have been interviewed who perform their business in urban localities of Ranchi city. They have been found carrying the retailing of vegetables for last 8-20 years. While asking about the volume of selling of cauliflower during the reference year 2009-10, they on an average purchased 27.25 quintal during the period for which they paid Rs. 11389. They sold it ranging between Rs. 6/kg to Rs. 15/kg. Their annual profit is calculated on an average Rs. 13250/-, which is more than double the purchasing price. Storage (93.33%) is their main constraints for which they suggest for pucca roofed market complex at different localities and transportation facilities by the management of market complexes.

In case of retailing of cauliflower in EMC condition, it is full proof. Ranchi has three RF retail outlets, which are opened at 9.00 AM in the morning and lasts till 9.00 PM in the evening. Vegetables are scientifically graded and shelved in air conditioned stalls. Prices are exhibited. There is computerized weight and measurement system. But the price level is a bit higher than open market retails. Due to its growing business RF stores faced the ire mobs comprising of local vegetables vendors. They vandalized and attacked the stores claiming that they are stealing their livelihoods *(National: Traders Attack Reliance Fresh Retail Outlets), The Hindu, 2007-05-13, Retrieved*

2010-12-31). Moreover, retailing in vegetables is continuing in Ranchi, but it will be early to say that whether vegetables retails will be flourished or vanished in near future. The irony of the fact is that unless and until more vegetables retail outlets by other corporate houses are allowed to operate in the state, RF vegetables' retailing may not be emerged as the outcome of market reforms strategy.

Box-II: Marketing of Vegetables through Emerging Marketing Channels

Till recent past, vegetables were exclusively sold in local markets --- be it rural or city markets. But, with the amendments in Jharkhand Agricultural Produce Marketing Committee Act, corporate like Mukesh Ambani controlled Reliance Retail Store has entered into the retail segment especially with respect to fruits and vegetables. It had launched its first outlet in November 2006 under the Reliance Fresh (RF) Banner. In Jharkhand, there are 10 RF outlets in Ranchi, while Jamshedpur and Dhanbad seven each. Incidentally, 2 RF outlets --- one in upper bazar, Ranchi and one in Jugsalai, Jamshedpur --- have already closed down. However, this is being attributed to non-viability due to their poor location. And performance of many others is reportedly poor. In May, 2007 the RF outlets at Ranchi was attacked by local fruits and vegetables' vendors. Protesters say their business is taking a beating as Reliance is selling their products at much cheaper rates. Vendors allege the new mart is pushing them out of market. On the other hand, people have been queuing up to buy vegetables from the three Reliance shops set up in Ranchi in 2007. Thousands of vegetables sellers, mostly women, were demanding closure of the Mukesh Ambani controlled Reliance Retail Stores. On 10th May, 2007 wielding pumpkins and broomsticks, vegetable vendors --- most of them women --- staged protests against the RF shops accusing the firm of undercutting and pushing them out of market --- was one of the first such protests by small traders against organized retailing. Since then retailing business of fruits and vegetables by RF is not much expanding.

CHAPTER – V

MARKET EFFICIENCY: COMPARISON OF THE MARKETING CHANNELS

Market efficiency is the degree of market performance. An efficient marketing system is one of the key components for enhancing agricultural productivity, which encourages the farmers by giving them fair returns for their producer. The economic efficiency of a market is generally measured in terms of 'price-spread' of an agricultural commodity. The hypothesis is that larger the price spread, greater the inefficiency in the marketing system and vice-versa. The marketing costs and margins as used in relation to the marketing of agricultural produce refer to the difference between the price paid by the ultimate consumer and the price received by the farmer-producer. The spread consists of marketing costs and margins of the intermediaries, which ultimately determine the overall effectiveness of a marketing system. If goods could be moved from the producers to the ultimate consumers at the minimum cost consistent with the provisions of services and consumer's desires, the marketing system is taken to be efficient. In above backdrop, the present chapter is focused on market efficiency of reference crops in comparative discussions of TMC and EMC.

BIHAR *(Mango)*

For mangoes, the study of market margins, which refers to the margins of farmers and other intermediaries of both the channels, is important because the conditions of marketing the produce in either channel are not much different. In spite of it some producer-seller opted for traditional channel and some with the persuasion of local traders/agents opted for selling the produce in big urban mandies/markets for higher gains. But the data presented in table number 5.1 does not show much encouraging pictures in case of the farmer's margins. Though, it is little higher in case of producer-sellers of EMC compared to TMC. The data indicate that farmer's margin is Rs. 1599/qtl on TMC and Rs. 1649/qtl on EMC farms.

Average farmer's margin on TMC is estimated at Rs. 1670/qtl whereas that of Rs. 1748/qtl on EMC households. It reveals that there is little difference in margins of the producers. It is due to the fact that price-spread on both the channel is large.

Table No. 5.1: Farmer's Margin in marketing of Mango in Bihar

Particulars	TMC	EMC
Quantum Transacted		
Quantity sold (qtls) by Farmer to Specified Market Channel	95.00	96.60
Price paid for purchase (Rs. /qtl) from Farmer	1472.00	1850.00
Total Cost at which Produce was Sold	139840	178710
Marketing Costs to Sell it to the Next Agent (Rs./qtl)		
Loading and Unloading Costs	5.10	7.80
Transport Costs	15.20	40.50
Commission Charges	---	8.30
Storage Cost	---	---
Mandi Tax	---	28.75
Development Cess	---	---
Weighing Costs	---	---
Brokerage Expenses	---	---
Other Fees paid specify bribes to market comm. members	---	---
Total Farmers Marketing Costs (TFMC)	19.91	82.39
Disposal (qtls)		
Quantum Taken to the Specified market (Marketed)	95.00	96.60
Quantity Sold in Specified Market	78.00	76.00
Quantity not sold in specified market (if reject, etc. specify)	---	---
Quantity sold elsewhere (specify)	17.00	20.60
Any other disposal (Wastage in marketing, etc may add rows)	0.55	0.80
Total Quantum Sold	94.45	95.80
Sales	---	---
Quantity sold in specified market (qtls)	78.00	76.00
Price in specified market (Rs./qtls)	2250	2845
Sales in specified market (Rs.)	175500	216220
Quantity sold elsewhere (qtsl)	17.00	20.60
Price elsewhere (Rs./qtls)	1830	2215
Sales elsewhere (Rs./	31110	45629
Total Farmer Sales (TFS)	206610	218435
Costs per quintal (Rs.)		
Marketing Cost per qtl	19.91	82.39
Production cost per qtl	484.10	513.18
Total per quintal farmers costs	504.01	595.57
Average Returns (Rs.)		
Total sales	206610	218435
Total farmers costs	47881	57532
Average Farmer Price (AFP)	2174.84	2261.23
Marketing cost as % of AFP	0.92	3.64
Marketing cost as % TFS	0.92	4.00
Average Farmer Margin (AFM) Rs./qtls	1670	1748
Marketing Cost per quintal	20.30	85.35
Average Farmer Margin (AFM) Rs./qtl	1670.83	1748.05
Marketing cost as % of AFP	0.92	4.00
Quantity sold (qtls)	95.00	96.60
Price at which it was sold (Rs./qtl sold)	1472.00	1850.00
Wastage (qtl)	7.90	8.51
Value of the wasted tomatoes	3823	4363
Unsold produce (qtl)	---	---
Total sales	206610	218435
Total farmer costs	54706	60024
Margin of the Farmer (Rs.)	151904	158411
Margin per qtl sold (Rs.)	1599	1640

The results of the estimation of the producer's share and the different components of price spread of mango in selected district are presented in table number 5.2. Taking together all sample farmers the table shows that producer's share in consumer's rupee in case of TMC and EMC does not varies. It hovers around 65.00 per cent on both the channels, which reveals that producers seller of EMC have not interestingly opted marketing of their produce through EMC rather the traders manage to purchase their produce and sell them to the outside markets and earn the profit without having any pains of producing the crop or making contract before the harvesting like the pre-harvest contractors. Though the producer-seller of EMC get higher price for their producer, as is evident from the table that they get Rs. 1850/qtl whereas that of by TMC farmers is Rs. 1472/qtl. But the producer's share in consumer's rupee is almost the same. It reveals that the price spread on EMC is also large like TMC. So is the reason that other intermediaries of EMC also get their share like the shares received from TMC farms. The table further showed that the share of other intermediaries varies slightly. Pre-harvest contractor of TMC get 12.36 per cent of consumer's rupee whereas traders of EMC 13.22 per cent of consumers rupee. Similarly the wholesaler's margin is 6.22 per cent on TMC whereas that of 7.45 per cent on EMC. Retailer's share is 13.67 per cent on TMC farms whereas that of 11.30 per cent on EMC farms. The marketing cost account for 2.33 per cent of consumer's rupee on TMC farms whereas that of a little higher on EMC farms (3%). Thus, the inference may be drawn here that reduction in multiplicity of intermediaries would substantially reduce the marketing margins. Moreover, due to high variations among the different intermediaries, marketing conditions can not, therefore, be said efficient as the higher proportion of intermediaries' margins reduces the producer's share in consumer's rupee.

Table No. 5.2: Producer's Share and Price Spread of mango in Bihar (In Rs./qtl)

SN	Particulars	TMC		EMC	
		Amount	%	Amount	%
1.	Producer's Share	1472.00	65.42	1850.00	65.03
2.	Pre-harvest Contractor's/Trader's Margin	278.00	12.36	376.00	13.22
3.	Wholesaler's Margin	140.00	6.2	212.15	7.45
4.	Retailer's Margin	307.50	13.67	321.50	11.30
5.	Total Cost of Marketing	52.50	2.33	85.35	3.00
6.	Consumer's Rupee	2250.00	100.00	2845.00	100.00

Market Efficiency

Marketing efficiency particularly for comparing the efficiency of alternate markets/channels, Acharya has suggested modified measure, which may draw with the help of followings:

$$MME = FP \div (MC + MM)$$

(MME = Modified measure of marketing efficiency)

Table No. 5.3: Measurement of Market Efficiency

SN	Particulars	Unit	TMC	EMC
1.	Retailer's Sale Price or Consumer's Purchase Price (RP)	In Rs/qtl	2250	2845
2.	Total Marketing Cost (MC)	In Rs./qtl.	52.50	85.35
3.	Total Net Margins of Intermediaries (MM)	In Rs./qtl.	725.50	910.00
4.	Net Price Received by Farmers (FP)	In Rs./qtl	1472.00	1850.00
5.	Value Added (1-4)	In Rs./qtl.	778.00	995.00
	Acharya's Method of MME MME (Modified Measure of Market Efficiency) MME = FP ÷ (MC + MM)	Ratio	1.892	1.858

The results of the measurement of marketing efficiency of mangoes on both the channels have been presented in table number 5.3. It showed that it is 1.892 and 1.858 on TMC and EMC respectively. It clearly indicates that merely change of market and place does not increase marketing efficiency and so, the efficiency on both the channels is almost same. It may increase only when the margins of intermediaries are reduces. So the role of traders in EMC is just like post-harvest contractors for marketing the mangoes, whose purpose in to grab the produce either providing credit to the producers in their needs or to persuade them to sell their produce to through them in bigger market for higher gains.

JHARKHAND *(Cauliflower)*

For vegetables in general, the study of price spread is complicated, because of the wide variations in conditions under which vegetables are marketed. Depending upon the channel through which, and the form in which, vegetables enter the markets the producer-sellers will get varying returns for their produce. Further price-spread varies considerably according to nature of the perishability of vegetables and type and location of the market. For example, market charges paid

by the producer for marketing his produce may likely to be higher in unregulated market than in regulated markets. The mode of sale, weighment facilities, packaging practices etc; as exist in different markets would also influence the producer's share differently. The cost of marketing varies widely from time to time and place to place depending upon the distance involved and the services performed. Despite all these an attempt has been made to estimate the costs and margins and the resultant price-spread of cauliflower. The data presented in table 5.4 gives the nature and magnitude of farmer's margin in marketing of cauliflower. The table revealed that the farmer's selling price of the cauliflower is Rs. 385/qtl on TMC farms and a bit higher i.e., Rs. 410/qtl on EMC farms. It is to be pointed out here that Reliance Fresh (RF) purchase the produce from the farmer's field and provide sorting, grading weightment and transportation facilities through its collection centres. So the marketing costs on EMC farms are met by the RF. Farmers simply harvest and sell the produce directly to the functionaries of RF and their farms. It is due to the fact that the total cost of marketing on TMC farms is Rs. 5414 for marketing of 207.50 quintal of cauliflower whereas that of about one-eighth (Rs. 686/quintal) on EMC farms. The average farmer margin has been estimated at Rs. 166.08/quintal and Rs. 192.41/ quintal on TMC and EMC farms respectively. The results further showed that the farmer's margin on TMC farms is Rs. 133/quintal whereas that of Rs. 194.09/quintal on EMC farms. On the basis of these results, it can be said that the farmer's margin is higher on EMC farms compared to TMC farms.

Table No. 5.4: Farmer's Margin in marketing of Cauliflower in Jharkhand

Particulars	TMC	EMC
Quantum Transacted		
Quantity sold (qtls) by Farmer to Specified Market Channel	207.50	208.00
Price paid for purchase (Rs. /qtl) from Farmer	385.00	410.00
Total Cost at which Produce was Sold	79887.50	85280.00
Marketing Costs to Sell it to the Next Agent (Rs./qtl)		
Loading and Unloading Costs	6.10	NA
Transport Costs	14.25	NA
Commission Charges	8.00	NA
Storage Cost	---	---
Mandi Tax	---	---
Development Cess	---	---
Weighing Costs	---	---
Brokerage Expenses	---	---
Other Fees paid specify bribes to market comm. members	---	---
Total Farmers Marketing Costs (TFMC)	5416	686
Disposal (qtls)		
Quantum Taken to the Specified market (Marketed)	207.50	208.00
Quantity Sold in Specified Market	181.20	164.00
Quantity not sold in specified market (if reject, etc. specify)	---	---
Quantity sold elsewhere (specify)	17.15	38.15
Any other disposal (Wastage in marketing, etc may add rows)	9.15	5.85
Total Quantum Sold	198.35	202.15
Sales		
Quantity sold in specified market (qtls)	181.20	164.00
Price in specified market (Rs./qtls)	385.00	410.00
Sales in specified market (Rs.)	69762	67240
Quantity sold elsewhere (qtsl)	17.15	38.15
Price elsewhere (Rs./qtls)	295.00	340.00
Sales elsewhere (Rs./	5059.25	12971.00
Total Farmer Sales (TFS)	74821.25	12971.00
Costs per quintal (Rs.)		
Marketing Cost per qtl	26.10	3.30
Production cost per qtl	168.41	166.27
Total per quintal farmers costs	194.51	169.57
Average Returns (Rs.)		
Total sales	74821.25	80211.00
Total farmers costs	47225.00	44910.00
Average Farmer Price (AFP)	360.59	361.98
Marketing cost as % of AFP	7.24	0.92
Marketing cost as % TFS	7.24	0.92
Average Farmer Margin (AFM) Rs./qtls	166.08	192.41
Marketing Cost per quintal	28.35	NA
Average Farmer Margin (AFM) Rs./qtl	166.08	192.41
Marketing cost as % of AFP	7.24	0.92
Quantity sold (qtls)	207.50	208.00
Price at which it was sold (Rs./qtl sold)	385.00	410.00
Wastage (qtl)	8.40	5.10
Value of the wasted tomatoes	3234.00	1938.00
Unsold produce (qtl)	---	---
Total sales	74821.00	85280.00
Total farmer costs	47225.00	44910.00
Margin of the Farmer (Rs.)	27596.00	40370.00
Margin per qtl sold (Rs.)	133	194.09

Further, the relevant findings of the study regarding the break-down of the consumer's rupee i.e., overall margins or price spread have been presented in table number 5.5. The results of the table clearly indicate that producer's share in consumer's rupee is 47.53 per cent on TMC farms and 49.40 per cent on EMC farms. The margins of intermediaries taking together is around 44.32 per cent on TMC farms whereas about 50.60 per cent of consumer's rupee goes to RF on EMC farmers for transacting the functions of collection, sorting, grading, weightment, transportation and other marketing costs. In case of TMC farmers, the margins of itinerant traders/kutcha arhatiya in larger i.e., 16.66 per cent of the consumer's rupee followed by retailer's margins (14.70%) and wholesaler's margin (12.96%). It revealed the fact those who worked for round the year on their own land and met the cost of production, get less than half of the consumer's rupee and those who worked not more than a week get almost 50.00 per cent of the consumer's rupee. It means there is larger the price spread on both the channels. The study finds that the EMC farmers are opted EMC route for marketing their vegetables not because of low price spread rather they do not want to face the multiplications raised at different intermediaries' level. So the marketing conditions can not be called an efficient system as the higher proportion of intermediaries' share in consumer's rupee.

Table No. 5.5: Producer's Share and Price Spread of Cauliflower in Jharkhand (In Rs./quls)

SN	Particulars	TMC		EMC	
		Amount	%	Amount	%
1.	Producer's Share	385.00	47.53	410.00	49.40
2.	Itinerant Trader/Kutcha Arhatiya's Margin	135.00	16.66	420.00	50.60
3.	Wholesaler's Margin	105.00	12.96		
4.	Retailer's Margin	119.00	14.70		
5.	Total Cost of Marketing	66.00	8.15		
6.	Consumer's Rupee	810.00	100.00	830.00	100.00

Market Efficiency

The movement of goods from producers to consumers at the lowest possible cost, consistent with the provision of the services desired by the consumer, may be termed as efficient marketing. A higher level of consumer satisfaction even at a higher marketing cost may mean increased marketing efficiency. In case of present

study marketing efficiency has been drawn with the help of Acharya's MME Formula, as noted below:

$$MME = FP \div (MC + MM)$$

(MME = Modified Measure of Marketing Efficiency)

The results of measurement of marketing efficiency of cauliflower on both the channels have been given in table number 5.6. It finds that the ratio of marketing efficiency is 0.91 on TMC farms whereas that of 0.98 on EMC farms. It indicates that merely change of marketing channel does not increase marketing efficiency significantly, as is evidenced from the result of the marketing efficiency of cauliflower of both the channels. It has little difference. In fact increase in efficiency of vegetables' marketing can be brought about by a wide range of activities between producers and consumers.

Table No. 5.6: Measurement of Market Efficiency

SN	Particulars	Unit	TMC	EMC
1.	Retailer's Sale Price or Consumer's Purchase Price (RP)	In Rs/qtl	810.00	830.00
2.	Total Marketing Cost (MC)	In Rs./qtl.	66.00	420.00
3.	Total Net Margins of Intermediaries (MM)	In Rs./qtl.	359.00	
4.	Net Price Received by Farmers (FP)	In Rs./qtl	385.00	410.00
5.	Value Added (1-4)	In Rs./qtl.	425.00	420.00
	Acharya's Method of MME MME (Modified Measure of Market Efficiency) MME = FP ÷ (MC + MM)	Ratio	0.91	0.98

CHAPTER – VI

CONCLUSION AND POLICY IMPLICATIONS

Background

In the 21st Century, when international trade barriers are being overcome through free trade agreements, Indian farmers from one notified area are not allowed to sell their agricultural produce in another notified area of the same state. It is due to the fact that there is a strong license raj in agricultural marketing. It we dig deeper into the issue of agricultural marketing, it would emerge that the government, by virtue of provisions in the Agriculture Produce market Regulation (APMR) Act, is responsible for hoarding by traders and the consequent spiraling prices. The APMR Act, more commonly known as Agricultural Produce Marketing Committee (APMC) Act, of the respective state governments, was formulated in the mid 1960s. It authorizes state governments to set up and regulate wholesale agricultural markets with the stated objective of ensuring the farmers get a fair price for their farm produce, and of protecting them from exploitation by the traders.

Most APMCs limit the number of licenses issued to traders to deal in purchase/sale of agricultural produce in their respective markets. The farmers are only allowed to sell their produce within the APMC market premises. Most markets lack the proper infrastructure to store perishables and as a result, farmers are forced to sell their perishables at the price quoted by traders (incentivizing traders). When a large number of farmers sell their produce in a mandi to a limited number of traders, the dice is loaded against the farmers and consumers. It is evident from various studies that there is considerable gap in facilities available in the market yards and creation of marketing monopolies, which are detrimental to the growth of agriculture and farmers.

In view of this, the government has recognized the importance of liberalizing agriculture marketing in early years of this century resulted to constitution of an expert committee under the chairmanship of Shri S Guru. Subsequently on the basis of committee's report and thereof recommendations of Inter-Ministerial Task Force, Ministry of Agriculture, Government of India formulated a model APMC Act, in 2003 and advised states to implement the Act. The amended act aims at complete transformation of agricultural marketing in India to make it more market and growth oriented. But states have resisted APMC reforms, as they fear a loss of mandi revenue.

In fact the amended APMC Acts will allow varying degrees of flexibility and increasing role of private players in improving the efficiency of the agricultural marketing value chain. Many states have amended their APMC Act and some states are yet to notify the relevant rules. The states where it amended, the agricultural marketing situations have tremendously changed and thus, the Marketing Division of the Department of Agriculture & Co-operation, Ministry of Agriculture, Government of India assigned its Agro-Economic Research Centres/Units to undertake a study entitled **"IMPACT OF EMERGING MARKETING CHANNELS IN AGRICULTURE MARKETING--- BENEFIT TO PRODUCER-SELLERS AND MARKETING COSTS AND MARGINS OF MAJOR AGRICULTURAL COMMODITIES IN THEIR RESPECTIVE STATES.** Accordingly, Agro-Economic Research Centre for Bihar & Jharkhand, T M Bhagalpur University has conducted the study in Bihar & Jharkhand states.

Objectives of the Study

The broad objective of the study is to assess the impact of emerging marketing channels in agricultural marketing and benefit to producer-sellers and marketing costs and margins of major agricultural commodities in the states.

Research Questions

i. *What has been the farmer's share in the consumer rupee in emerging models vis-à-vis the traditional marketing channels?*
ii. *What is the degree of market efficiency and incidence of post harvest losses in emerging marketing channels vis-à-vis traditional marketing channels?*

iii. *What the market practices and services provided by different agencies in the emerging marketing channels vis-à-vis traditional marketing channels?*

iv. *What are the constraints faced by the farmers and different market functionaries in the emerging marketing Channel vis-à-vis traditional marketing channels?*

Methodology

The study has been undertaken in Bihar & Jharkhand states. The reference crops for the study are mango among the fruits and cauliflower among the vegetables in Bihar and Jharkhand respectively. In Bihar among the fruits (290.71 thousand ha) nearly one third of mangoes is produced in five prominent districts. Out of these 5 districts, Bhagalpur is one, which has specialty in production of Jardalu variety of mangoes, known for decent flavor, juicy content and export potential, has been selected for the study. Keeping in view of crop prominence in the district Nathnagar and Sultanganj blocks have been selected for farm level enquiries. In Jharkhand, among the vegetables (57 lakh ha), cauliflower (27.30 thousand ha) is grown in 10.00 per cent of total vegetable's area. Cauliflower is largely produced in Ranchi district, which account for more than 10.00 per cent of total cauliflower's area in the state. So for the purpose of study, Ranchi district has been selected and in the district for farm level enquiries Pithoria and its adjoining villages falling under Kanke block has been selected, as the Reliance Fresh's collection centre of vegetables is also operating extensively in these villages.

The sample has been drawn from both the marketing channels viz., traditional (TMC) and emerging (EMC). Fifty farm households each from TMC and EMC in each state have been selected covering proportionately from small, medium and large farm categories. This way the size of the sample in each state is 100 households. Besides farm households, other market players and consumers have also from included in the sample. It constitutes buyers/traders (05), retailers (15) and consumers (15) on TMC category in each state and buyers (05) and consumers (15) on EMC category in each state, taking together 30 and 20 on TMC and EMC group in each states.

The agricultural marketing reforms status in the light of model APMC Act (2003) in Bihar & Jharkhand may be looked as below:

Agricultural Market Reforms

State(s)	Reform Status	Remarks
Bihar	BAPMC Act repealed w.e.f., 01/09/2006	Open/unregulated Agricultural Market
Jharkhand	Reforms to JAPMC Act have been done for Direct Marketing, Contract Farming and markets in Co-operative/Private Sectors w.e.f., 06/12/2008	Dialogues with the corporate bodies or individuals are taking place for contract farming etc.

BIHAR

It was in the 1958 that the Government of Bihar took an important step in regard to market regulation of agricultural produce and a bill known as "Bihar Agricultural Produce Markets Act, was passed in 1960. With the enforcement of Act and until November 2000, the state had 122 agricultural produce market committees. Out of these, 95 fell in residual Bihar, after carving out Jharkhand state in November, 2000; and remaining 27 in Jharkhand state. Subsequently in 2006, Government of India suggested through its model Act (2003), to amend BAMPC Act (1960) so as to allow private players etc. in marketing of agricultural commodities. But the state government repealed the same w.e.f., 01/09/2006.

After the repeal of Bihar Agricultural Produce marketing Committee Act (BAPMC act), agricultural market in the state is functioning without any formal institutional structure. However, the state government has made an ambitious market development scheme assisted Asian Development Bank under market infrastructure development project and NHM, with five modern terminal markets at the top, 54 marketing yards belonging to Bihar State Agricultural Marketing Board (BSAMB) being converted to Agri-business Centres in the middle tier, and 1500 rural haats with developed facilities at the grass not level. These haats/agri-business centres are proposed to be fed by 10,000 on farm primary processing centres (OFPPC) at farm gates.

Traditionally in marketing of mangoes, the role of pre-harvest contractors is important, who are mostly local or of adjoining areas/districts pay visit to the mango orchards at the flowering stage of fruit with a view to assess/estimate the volume of production and accordingly they undergo agreements with the

growers/orchard owners for 1 to 3 years or 1 to 2 years usually. The agreement is made on per mango tree basis ranging between @ Rs. 1000/tree to Rs. 3000/tree. Since these pre-harvest contractors are mostly local keep close touch with the orchard owners and provide credit facility all around the years in lieu of making the contract of the orchards at the time of flowering. In fact they are less market intermediaries more mahajans in many cases.

Exploitation of other intermediaries and sometimes by pre-harvest contractors when became, the order of the day, growers opted a chain i.e., 'traders,' who are mostly local or of adjoining areas rather from their own society for marketing the produce in distant urban market directly. These traders act as the representative of the producer-sellers. Traders after collecting the mangoes arrange the sorting, packaging and transporting to big city markets like Kolkata (West Bengal), Ranchi, Bokaro and Dhanbad (Jharkhand) and sometimes in Uttar Pradesh, where they sell the produce in urban mandies. After selling the produce, traders return to village(s) and pay the amount to the respective growers as per their sold volumes of the produce and the price realized in those markets on account of selling the produce. In fact, this new chain has emerged mainly after the development of road and connectivity and improvement in law and order in the state in post BAPMC Act repealed era. But this has not been emerging very prominently because of lack of proper trading rules and other marketing infrastructure.

JHARKHAND

The state agricultural produce market act is in existence in Jharkhand. After bifurcation from Bihar in November 2000 Jharkhand adopted APMC Act in toto as it was the then APMC Act in Bihar. Subsequently JAPMC Act amended in accordance with the APMC Model Act (2003) in 2007 and came into effective from 06/12/2008. Provisions for direct marketing, contract farming and markets in co-operative/private sector have been made. But it is yet to be effected. However, dialogues are going on with corporate bodies for contract farming etc.

Traditionally, the most prominent marketing agencies for marketing of vegetables in general are kutcha arhatiya or small commission agent or the agent of wholesaler who buy vegetables from the farmers in the rural haat/periodical markets. During in course of survey, it has been found that vegetables are not being bought or sold in the market yards in Ranchi district (the study area). The co-operative institution as an marketing agency does not play important role in marketing of vegetables even if it still exists (VEGFED) in Jharkhand. It became non-functional in vegetables' co-operative marketing; however, it is doing some other works.

In fact, APMC Act prohibits transaction outside the regulated mandies. This Act does not allow direct marketing and direct procurement of agricultural produce from farmer's field. Moreover APMC Act restricts the setting-up of markets other than by the state governments. This act is coming in the way of a new private initiative in the modern retailing and upgrading of the supply chain especially in the field of fruits and vegetables. In view of this, government of Jharkhand amended APMC Act and allowed corporate like Reliance Fresh in retailing of vegetables. Now Reliance Fresh (RF) in Ranchi district has emerged as a new channel for retailing vegetables. At present RF have three retail outlets and two collection centres in Ranchi. A few thousand farmers have been hooked on to the Reliance Retail Supply chain in the district through its collection centres, which are linked with consortiums where grading and standardization takes place. Its supply chain is as below:

Producers/Local Farmers---- Collection Centres ---- RF Outlets ---- Consumers

Comparison of the Benefits in TMC and EMC

BIHAR

Mango is grown for over hundreds of years and more than dozen of varieties in the district. The popular varieties are Dudhia Maldah, Zardalu, Bombay Gulabkhas, Bharatbhog, Fazli, Malikka, Amrapali, Biju etc. The cultivation of mangoes in the district is traditional and practice adopted for its maintenance is annual. The average age of mango orchard is reported to be 23 years 6 months in case of

households enquired for the purpose of TMC and 30 years 4 months for EMC. On overall the average area under the crop is 0.80 ha on TMC households and 0.82 ha on EMC households. The total production cost has been estimated at Rs. 9503/ ha in case of TMC households and Rs. 9037/ha in case of EMC households. Per hectare fixed cost is estimated at Rs. 13164 in case of TMC households and Rs 13308 in case of EMC households. Total marketing cost stands at Rs. 812/ha and Rs. 3415/ha on TMC and EMC farms respectively. The economics of mango production in terms of costs and net returns, the results indicate the overall cost of cultivation and gross return are Rs. 23479.05/ha and Rs. 59984/ha, resulting in net returns of Rs. 37316.95/ha on TMC farms whereas those are Rs. 25761.45/ha and Rs. 76682.50/ha, resulting in net returns of Rs. 54336.55/ha in case of EMC farms. The results further indicate that the cost-benefit ratios are 1:2.56 and 1:2.98 on TMC and EMC farms. It indicates that returns are higher on EMC farms over TMC farms.

As regards the association of farmers with emerging marketing channel is concerned it is very interesting to note here that out of 58 small farmers, 21 medium farms, and 21 large farms, 21 (36.21%), 12 (57.15%) and 17 (80.96%) respectively associated with EMC farms. It clearly indicates that large sized farms have greater association with the EMC. It is mainly because that they do not want to move outside the farm gate for marketing the produce as well as prefer to dispose larger volume of the produce to one buyer rather more than one buyers. Selling to one chain of intermediaries is beneficial in the sense that the responsibilities of all the marketing activities like sorting, grading, weightment, transportation etc. lie with him. So far as the facilities to the farm households from the buyers is concerned, it is not provided for cultivation of the mangoes as such, however, sometimes advances are given to the households mainly for purchase of the produce.

In case of EMC, trader is the new intermediary who has taken the place of pre-harvest contractor of TMC so they may be called as post-harvest contractor. In marketing of mangoes, the spread has not been reduced in EMC. We may simply say replacement of a intermediary by a new one, who sells the produce on behalf of

the producer-sellers in urban mandies. In lieu of it he gets some margin like the margins of other intermediaries.

JHARKHAND

Cauliflower is the most popular vegetable among the Cole crops. It is a delicate crop and needs more care to grow successfully than most other vegetables. The cauliflower varieties are very responsible to temperature photoperiod. It is to be very important to choose right variety to be sown at the right time. Broadly, cauliflower varieties can be grouped as early, mid-season and late. Cauliflower producers best curds in a cool and moist climate. The climate of Ranchi district (study area) is very congenial for vegetables' production. The district produces vegetables in all round the year. So cauliflower is grown in the district in all the seasons. On overall the average area under the crop is 3.34 ha on TMC farms and 3.30 on EMC farms. The overall cost of production at TMC farms is estimated at Rs. 37050/ha whereas that of at EMC farms Rs. 36910/ha. Out of the total production costs, the proportion of the cost incurred on human labour (50.80%) is higher followed by mannuring (11.40%), seeds (9.78%), fertilizer (7.60%), irrigation (5.26%), field preparation (5.00%) and plant protection materials (4.82%) at TMC farms whereas that of 47.00 per cent on human labour, 12.21 per cent on mannuring, 9.62 per cent on seedlings, 7.97 per cent on fertilizers, 7.11 per cent on other paid out costs on EMC households. The gross return out of the sale of marketed surplus has been calculated at Rs. 79887.50/ha at TMC farms and Rs. 85280/ha at EMC farms. The results indicate that the Cost-Benefit Ratio (CBR) is 1:1.57 at TMC and 1:1.90 at EMC farms. It revealed that per ha return on EMC farms is higher over TMC farms.

As regards the association of farmers with emerging marketing channel is concerned it is to note here that out of 45 small farmers, 36 medium farmers and 19 large farmers 18 (45.00%), 2 (61.12%) and 10 (52.64%) respectively are associated with EMC farms, which indicates that large sized farms have greater association with EMC farms. Moreover, in marketing of cauliflower on EMC, the number of intermediaries has been certainly reduced as the EMC in Jharkhand is Reliance Fresh Retails. Reliance Fresh Retail Supply chain for cauliflower or vegetables in general

in the district is through its collection centre and retail outlets, the produce reaches to the consumers. So, the spread has been reduced but it has not increased the farmer's share in consumer's rupee. The margin of intermediaries goes to RF retails in stead of facilitating the farmers in procuring the produce from the fields.

Farmer's Marketing Costs

In Bihar, per hectare farmer's marketing costs for marketing mangoes has been estimated at Rs. 812 and Rs. 3415.50 on TMC and EMC farms respectively. The costs of marketing of per quintal of mangoes are Rs. 19.93 and Rs. 82.40 on TMC and EMC farms respectively. It revealed that the cost of marketing is higher on EMC farms. It is mainly due to selling the produce in distant urban big markets, which incur high cost of transportation of the produce.

In Jharkhand, per hectare farmer's cost of marketing of cauliflower is estimated at Rs. 5416 on TMC farms. The cost of marketing of per quintal of cauliflower is Rs. 8.56 on TMC farms. It could not be estimated on EMC farms because the produce is procured from the farmer's field by the collection agents of RF.

Prices at Retail end or Consumer's Price

In Bihar the analysis of the marketing pattern indicates the complex nature of marketing of mangoes particularly on account of its perishability. Farmers sell their mangoes as soon as it grows in proper size and the timing of the varieties of mangoes for harvesting. After harvesting and until reaching to the consumers these are being sold by different types of intermediaries. Sometimes the margins of these intermediaries are higher than the share of producer's in consumer's price. But the ultimate burden of margins goes to consumers. In case of the present study, the results indicate that the average consumer's price for mangoes is Rs. 2250/qtl on TMC farms and Rs. 2845/qtl on EMC farms, which are 52.86 per cent and 53.79 per cent higher respectively than respective the selling price of the producer-sellers.

In case of cauliflower in Jharkhand on an average the retail end prices are Rs. 810/qtl and Rs. 830/qtl on TMC and EMC farms respectively. These prices are nearly 110.39 per cent and 102.44 per cent on TMC and EMC farms respectively higher than the

respective selling prices of producer-sellers. It clearly indicates that taking together the margins of various intermediaries more than 100.00 per cent than the selling prices of the producer-sellers. In other words the retail end prices are more than double the selling prices.

Price Spread and Modified Measure of marketing Efficiency

One of the most widely accepted component for the study of agricultural marketing system is the measurement of 'price-spread.' The general hypothesis is that larger the price-spread, greater the inefficiency in the marketing system and vice-versa. In **Bihar,** the price spread for mangoes, taking together all the sample farms the producer's share in consumer's rupee in case of TMC farms is Rs. 1472/qtl (65.42%) out of the consumer's rupee (Rs. 2250/qtl.). The margins of pre-harvest contractors, wholesalers and retailers are Rs. 278/qtl (12.36%), Rs. 140/qtl (6.22%) and Rs. 307.50/qtl (13.67%). The cost of marketing the produce is Rs. 52.50/qtl (2.33%). In case of EMC farms, the producer's share in consumer's rupee is Rs. 1850/ qtl. (65.03%). The margins of traders, wholesalers and retailers are Rs. 376/qtl (13.22%), Rs. 212.15/qtl (7.45%) and Rs. 321.50/qtl (11.30%). The cost of marketing is Rs. 85.35%/qtl. (3.00%). It indicates that the selling price of produce in case of mangoes is almost one and half times more than what the producer gets. There is almost no difference in the prices, which the producers receive on either channel. It is due to the fact that in Bihar there is no significant change in marketing of mangoes rather it is almost traditional but unregulated. As regards the MME is concerned it is 1.892 and 1.858 on TMC and EMC farms respectively, which corroborates the fact that there is almost traditional pattern of marketing of mangoes in Bihar.

In **Jharkhand,** the price spread for cauliflower, taking together all the sample vegetable producers, the producer's share in consumer's rupee in case of TMC farmers is Rs. 385/qtl (47.53%) out of the consumer's rupee (Rs. 810/qtl). The margins between the producer-sellers and the consumers are Rs. 359/qtl which are distributed to Rs. 135/qtl (16.66%) for the kutcha arhatiya/itinerant trader, Rs. 105/qtl (12.96%) for the wholesalers and Rs. 119/qtl (14.70%) for the retailers. The cost of marketing is Rs. 66/qtl. (8.15%). In case of EMC farms, the producer's share

in consumer's rupee is Rs. 410/qtl. (49.40%). The margins between the producer-sellers and consumers including the cost of marketing is Rs. 420/qtl, which is 102.44 per cent higher the prices received by the producer sellers. It indicates that the selling price of the cauliflower in Jharkhand is more than double the price received by the producer-sellers on both the channels. As regards the MME is concerned, it is 0.91 and 0.98 on TMC and EMC farms respectively. The results of MME find that there is little difference in the marketing efficiency. However, it is a bit higher on EMC farms. But it is surprisingly very little, which corroborate the fact that RF is not doing justice either with the producers or consumers rather operating for the benefits of the corporate sectors.

Policy Implications

Improving and increasing the efficiency of fruits and vegetables marketing system is going to be an important agenda for 21 century. Fruits and vegetables both have vast potential for its production. To tape its potentiality maximal concerted efforts for production and marketing system are required. In the light of the findings and observations of the study some points for actions are suggested in following manner for policy implications:

Bihar (For Mangoes)

i. The proposed marketing development programme should be implemented at the earliest. *(Attn: Dept of Agriculture, Govt. of India).*

ii. There is need to create suitable number of fruits marketing zones in the state where fruits produced in and around the districts could be marketed *(Attn: Dept. of Agriculture & Dept. of Industries, Govt. of Bihar).*

iii. To minimize the wastages at the different levels in marketing of the produce regular training programmes for post-harvest management for all the stakeholders should be organized. *(Attn: Dept. of Agriculture, Govt. of Bihar & Agricultural Universities in Bihar).*

iv. To develop the resource base of fruit growers, linkages between the marketing and credit should be made so that producer's dependence on traders for credit, which puts them in a highly unequal trading relationship with the produce, could be steadily eliminated. *(Attn: Dept. of*

Agriculture, Dept. of Industries, Govt. of Bihar & State level Bankers' Committee, Bihar).

v. A multi-pronged implementation strategy for developing well integrated system of production and marketing should be formulated. *(Attn: Dept. of Agriculture, Govt. of Bihar).*

Jharkhand (For Vegetables)

i. Modernization of marketing linkage between the farmers and consumers is absolutely vital for which APMC Act need to be amended wherein vegetables and horticulture should be exempted from the APMC Act. This will enable the farmers to establish direct connection with the markets. *(Attn: Jharkhand State Agricultural Marketing Board and Dept. of Agriculture, Govt. of Jharkhand).*

ii. Vegetables marketing system in Jharkhand is outmoded, inadequate and devoid of infrastructural facilities. So it is necessary for all the three set of marketing institutions viz., public, co-operatives and private trade be continuously evaluated and on the basis of the identification of areas for improvement the appropriate policies and programmes be devised. *(Attn: Dept. of Agriculture & Dept. of Co-operative, Govt. of Jharkhand).*

iii. In Jharkhand, the district of Ranchi and its adjoining districts have advantages for cultivation of vegetables. In view of this it can be suggested of a multi-pronged strategy for developing well integrated system of production and marketing. *(Attn: Dept. of Agriculture, Govt. of Bihar).*

iv. The study suggests that the development of rural markets should be given due priority from the point of view of creation of market infrastructure such as grading, transportation, storage etc. If these facilities are provided at the centralized wholesale markets, the scale of operations will be high and the locations highly centralized with moot chance of benefits percolating to the farmers especially small farmers participating in small markets. The support to these farmers should receive priority in the future market reform policy. *(Attn: Dept. of Agriculture and Jharkhand State Agricultural Marketing Board, Govt. of Jharkhand).*

v. Being arriving at the conclusion that small and marginal farmers need credit thus, it is suggested to develop linkages between marketing and credit. *(Attn: Dept. of Agriculture & State Level Bankers' Committee, Govt. of Jharkhand)*

vi. Vegetables' processing units should be established and allow them special package for operating in the sector. *(Attn: Dept. of Industries, Govt. of Jharkhand).*

vii. To minimize the wastages at the different levels in marketing the vegetables, regular training programme for post-harvest management should be organized. *(Attn: Dept. of Agriculture, Govt. of Jharkhand & Birsa Agricultural University, Ranchi).*

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Annexure - I

Comments on the Report

"Impact of Emerging Marketing Channels in Agricultural Marketing--- Benefit to Producer-Sellers and marketing Costs and Margins of Major Agricultural Commodities in Bihar & Jharkhand"

1. The progress of reforms with respect to the agricultural marketing system and the APMC needs to be discussed in greater detail. A greater emphasis of the discussion should take place with respect to Bihar similar to the discussion with respect to Jharkhand. A more detailed discussion needs to take place. The table in page number 20 could be a starting point for a detailed discussion to commence. (Kindly also see Chapter 2 of the report of AERC, Pune for the nature of discussion of various Marketing acts and markets).
2. There is lengthy description of the study state and analysis of the secondary data. This needs to be done in a limited manner or if the authors are interested in doing this, this needs to be confined to a separate chapter. Tables in chapter 3 are incongruous. It has become confusing and difficult to get the real picture.
3. The sampling methodology for the primary data collected needs to specified with clarity (without being too descriptive and examination of secondary data). A table is required wherein the sample size across the channels, crops and the strata are clearly mentioned.
4. There is need for clarity on the presentation and analysis of data with respect to cost of cultivation. It was specified in our earlier instructions that family labour should not be imputed in the cost of cultivation. If such an imputation has been done (please check Chapter – 5), this needs to be presented separately. However, for the analysis family labour should not be included. There is need for clarity on how home consumption has been treated in the analysis. Tables in chapter 4 & 5 should be compatible and easily verifiable.
5. Table 4.2 & 4.7 are mostly at per hectare levels. The first row should give the average number of hectare under the crop so the reader can easily convert figures to per quintal levels or check consistently with table 5.4 etc.
6. The EMC for mango is not clearly mentioned--- the author should provide a suitable name for the channel.

7. There is need to undertake the analysis of the qualitative data that were collected from farm households including the data with respect to transaction costs (information costs, enforcement costs).
8. Interesting data based on discussion with farmers other marketing agents and key informants could be mentioned as Box items in the relevant chapters. This would be very useful to get greater insights.
9. There should be an acknowledgement of the support received from Institute of Economic Growth, Delhi and the names of the two Co-ordinators (Ananda Vadivelu & Nilabja Ghosh should be mentioned).

Sd/-
(Ananda Vadivelu & Nilbja Ghosh)
Co-ordinators
Institute of Economic Growth
University of Delhi
Delhi – 110 007

Dated: 18th July, 2011

Annexure - II

Action Taken Report

Date of Dispatch of Draft Report : 30/04/2011

Date of Receipt of the Comments : 25/07/2011

Actions Taken:

1. Incorporated accordingly
2. Revised in the light of comments
3. Revised/clarified
4. Necessary possible amendments made
5. Incorporated
6. Suitably presented
7. Analyzed accordingly
8. Incorporated a few boxes
9. Incorporated

Ranjan Kumar Sinha
Project Leader