



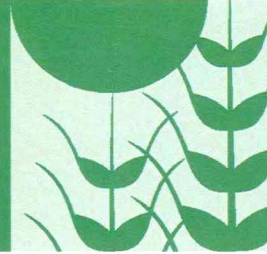
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AERC Report

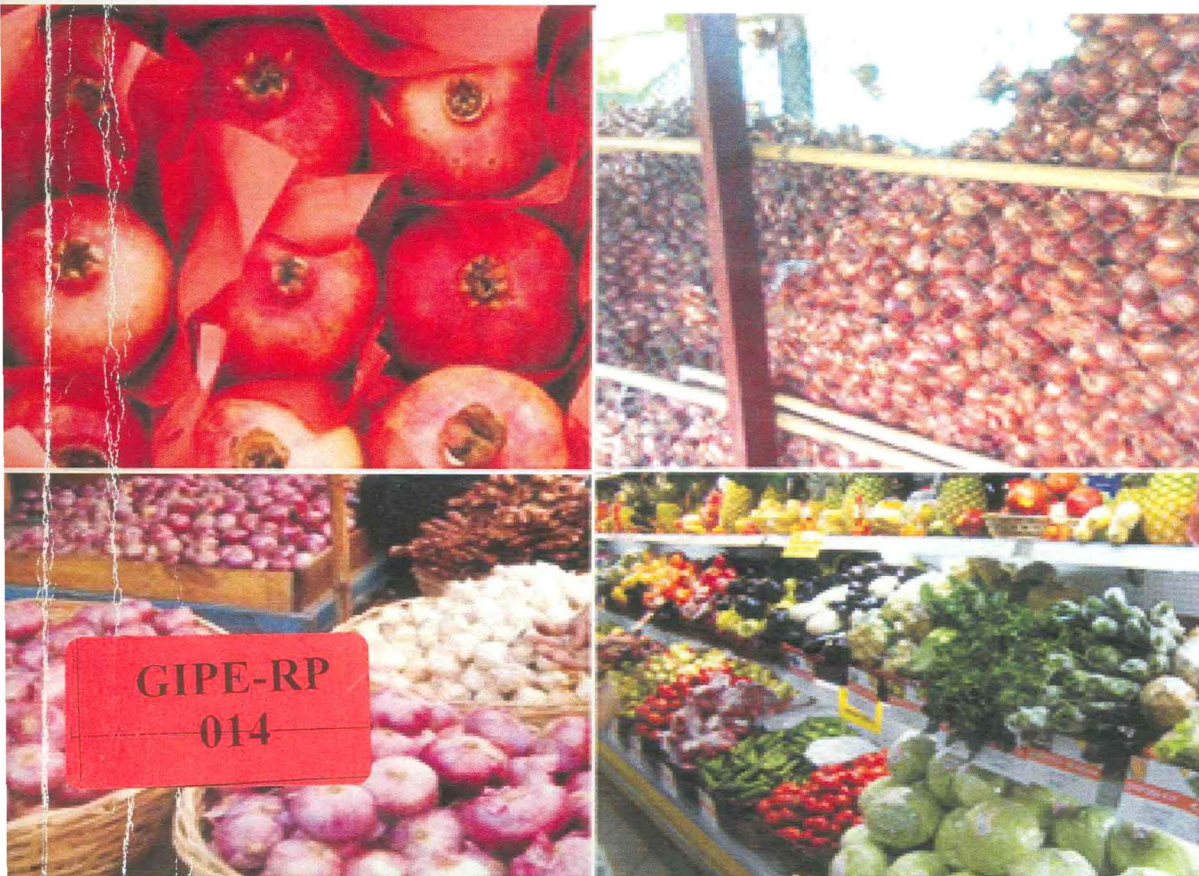


**Agro-Economic
Research Centre
(AERC)**

Impact of Emerging Marketing Channels in Agricultural Marketing in Maharashtra

*Benefit to Producers-Sellers and Marketing Costs and
Margins of Major Agricultural Commodities*

Sangeeta Shroff
S.S. Kalamkar
Jayanti Kajale



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April 2011

Foreword

Agricultural marketing in India is assuming increasing importance in view of major strides in the production of farm products, liberalization of agriculture and increasing net returns to farmers. Reforms pertaining to this sector have also been undergoing changes so as to make Indian agriculture more dynamic. Wholesale agricultural produce markets began to be regulated in the 1950s and 1960s when each state began regulating its Agricultural Produce Market Committee (APMC) Act, with a view to regulate the marketing of agricultural produce. Despite positive features of regulated markets such as sale through auction method, reliable weighing, standardized market charges, etc., regulated markets had limitations such as collusion amongst traders and poor infrastructure in APMCs, which defeated the purpose of the Act.

Due to bottlenecks in the APMC Act, and also new challenges and opportunities associated with agricultural marketing, all states were required to amend the APMC Act, in line with a Model APMC Act formulated by the Government of India in 2003, which aimed at complete transformation of agricultural marketing by making it more market and growth oriented as well as encouraging private sector investment in agricultural marketing. These changes have demolished the monopoly of the APMCs in agricultural marketing and opened up new marketing channels. Keeping this in mind, a study was sponsored by Ministry of Agriculture, Government of India to the AER Centre of our Institute, to observe the role of emerging marketing channels in agriculture in Maharashtra and the benefits to the producers and consumers.

The main findings of the study were that farmers benefitted by selling their produce through emerging channels because they did not bear marketing costs. However, marketing operations of emerging channels are very limited and restricted to purchase of superior quality produce which enables farmers to secure higher price. Further, these operations by and large reach farmers who have received farm advisory services of emerging channels, through expert advice, field visits and crop guidance. As far as traditional chain is concerned, strengthening and upgradation of infrastructure in regulated markets is necessary so as to reduce post harvest losses and benefit the producer and consumer. The findings of the study will be useful to academicians and policy makers.

I thank Sangeeta Shroff, S.S. Kalamkar and Jayanti Kajale for undertaking this study on behalf of the Centre.

April 26, 2011
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Officiating Director

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A number of officials from the Agricultural Produce Marketing Committee, Satana, and Deepak Fertilisers and Petro Chemicals Corporation Limited (DFPCL), Pune helped us in providing secondary information related to the study. We would like to mention a few persons who have helped us in completing the study. Shri A.R. Suryawanshi, Chairman, APMC, Satana helped us in getting the arrival and prices data/information related to onion and pomegranate. We are thankful to him for all the support he provided to us. Shri M.C. Goel, Chief Executive Officer (Agri business and Farming Solutions), DFPCL and Shri Kunwar J B Singh, Assistant General Manager – Farm Services helped us in getting center wise purchases of the selected commodities. We also benefited from useful discussions with them. We also thank officials of Sarathree Branch, Satana for their cooperation. We would like to record our sincere thanks to all the government officials for their invaluable help. We also thank all of them who have directly and indirectly helped in conducting this study.

The study would not have reached up to this stage without the active co-operation of the sample farmers, traders, retailers and consumers who provided all the required data for the study without any hesitation and expectation. We thank each one of them for their invaluable support.

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List of Abbreviations

ABFS	- Agri Business and Farming Solution
APMC	- Agricultural Produce Marketing Committee
ASMO	- Area Sown More than Once
Av.	- Average
DFPCL	Deepak Fertilisers and Petro Chemicals Corporation Limited
EMC	- Emerging Marketing channel
FCI	- Food Corporation of India
GAP	- Good Agricultural Practices
GCA	- Gross Cropped Area
GDP	- Gross Domestic Product
GIA	- Gross Irrigated Area
GIS	- Geographical Information System
GOI	- Government of India
GOM	- Government of Maharashtra
ha	- hectare
HYV	- High Yielding Variety
Kg.	- Kilo gram
mha	- Million hectares
MSAMB	- Maharashtra State Agricultural marketing Board
mt	- Metric tonnes
NABARD	- National Bank for Agriculture and Rural Development
NAFED	- National Agricultural Cooperative Marketing Federation
NCA	- Net Cropped Area
NHB	- National Horticulture Board
NHM	- National Horticulture Mission

NIA	- Net Irrigated Area
NSA	- Net Sown Area
PPP	- Public Private Partnership
Prod	- Production
Prodvty	- Productivity (kg/ha)
Qtls.	- Quintals
SD	- Standard Deviation
TMC	- Traditional Marketing channel

Chapter 1

Introduction

1.1 Backdrop:

Indian agriculture has set new milestones in its progress. Since independence, major strides have been made in production of food grains, not only due to increase in area but also due to technology. As a result the food grain production increased from 50.82 million tonnes in 1950-51 to 234.47 million tonnes in 2008-09 (GOI, 2011). After self sufficiency in food grains was met, the policy makers realized the need for diversification of agriculture to achieve higher growth rates as well as to adjust to the changing consumption pattern of the population which was experiencing urbanization and rising per capita incomes. Thus dairy, horticulture, poultry and other allied sectors were given impetus and are being promoted through various policy measures. India now ranks first in the world in milk production, second in fruits and vegetables and third in production of eggs (GOI, 2011). This increased production has brought in its wake new challenges to handle in terms of huge marketable surplus. Thus while increasing productivity and production in the agriculture and allied sector have always been the focus of Indian agriculture, attention is now being drawn on building up an efficient marketing system which includes adequate physical facilities for safe and economic handling of produce as well as institutional and legal support for orderly transactions. In the traditional agricultural value chain, bulk of trade in agricultural commodities takes place in the wholesale markets which are managed by Agricultural Produce Market Committees. Commission agents in these wholesale markets organize auctions on behalf of the farmers so as to sell the produce to the highest bidder. The intended aim of the commission agent is to enable farmers to get highest possible price and the farmer can directly witness the auction of his produce. Further, the commission agents also ensure that accurate and timely payment is made to farmers, so that transactions are in order. Marketing of agricultural produce also serves as a link between the farm sector on one hand and other sectors on the other hand. An efficient marketing system helps in the optimization of resource use, output management, increase in farm incomes, widening of markets, growth of agro-based industry, addition to national income through value addition and employment creation (Acharya, 2006).

Agricultural marketing in India is handled both by private trade as well as government intervention though major part of the agricultural produce is handled by private traders. The objectives and form of government intervention however change over time with the intention of protecting the interest of producers and consumers. A number of government organizations such as Food Corporation of India (FCI) are involved in agricultural marketing mainly to procure food grains at minimum support prices from producers and maintain a public distribution system. Similarly government corporations also exist for other crops such as cotton and jute. Further, there are also specialized marketing boards for rubber, coffee, tea, tobacco, etc. and a network of cooperatives at the local, state and national level. The National Agriculture Cooperative Marketing Federation (NAFED) of India handles domestic as well as export marketing for its member organizations. The Directorate of Marketing and Inspection (DMI) under Ministry of Agriculture, Government of India, is responsible for administering federal statutes concerned with marketing of agricultural produce. In order to improve the marketing system of farm products, wholesale agricultural produce markets began to be regulated in the 1950s and 1960s, when each state began implementing its Agricultural Produce Marketing Committee (APMC) Act. The APMCs were established in each state by the respective state governments with a view to regulate the marketing of agricultural produce in market areas. The regulation of markets had several positive features such as sale through auction method, reliable weighing, standardized market charges, payment of cash to farmers without undue deductions, dispute settlement mechanism, reduction in physical losses of produce and availability of several amenities in market yards.

Despite several advantages that regulated markets had, there still existed several limitations. A number of regulated markets could not function efficiently owing to collusion among traders in bidding low prices. There was similar collusion in the lack of prompt action by the Market Committee against breach of rules by any trader. The Market Committees for all practical purposes were dominated by traders' interest. Also, at times the proportion of village sales was so large that it made the operation of the APMC Act ineffective in providing fair price to the producer. In some regulated markets, there was no elected Market Committee, nor a market yard of the Committee where produce could arrive and auctions take place. Sales often took place in the shop of the commission agent without any supervision.

Further, the market fee collected by the APMC was barely used for development of the market and provision of modern facilities. There was often congestion in the market yard and farmers had to wait for long to dispose off their produce. Also, there were no proper facilities for the farmer to wait till his produce was finally disposed off. Finally when the produce was disposed off, deductions were made from the price to be paid to him on grounds that his produce was not up to the mark. The regulated markets also led to the monopolization of trade by way of granting licenses to intermediaries which barricade the entry of new functionaries.

In view of the uneven development of regulated markets, the inability to fight the vested interests of traders, the persistence of traces of collusion amongst traders even in regulated markets deprived the farmer of his due share in the final consumer's rupee, besides facing other hardships during sale of his produce. Therefore, due to these bottlenecks in the APMC Act and also new challenges and opportunities associated with agricultural marketing, across all states, the Government of India felt it was necessary to undertake market reforms through a change in market legislation. This matter has been under continuous scrutiny as agricultural marketing and exports of agricultural commodities were assuming increasing importance due to liberalization of trade, need for better supply management and need to improve infrastructure and market information. An Expert Committee on "*Strengthening and developing Agricultural Marketing*" under the chairmanship of Shri Shaknarlal Guru was appointed by government in December 2000. This committee (Guru Committee) reviewed the entire system of marketing of agricultural commodities and submitted its recommendations to the government in June 2001 and recommended requirement of a vibrant and dynamic marketing structure and system to meet the challenges emerging out of globalization in the post WTO period. An Inter-Ministerial Committee (chairman: Shri R.C.A. Jain, Additional Secretary, Ministry of Agriculture) was set up to examine the report and the legislative changes required for the implementation of this report. The Inter-Ministerial Task force recommended the formulation of a Model APMC Act which would improve the efficiency of the marketing system and encourage private sector investment in agricultural marketing. The amended Act aims at complete transformation of agricultural marketing in India to make it more market and growth oriented. The spirit of the Model Act was to enable producers to undertake market-driven production planning, facilitate integration of farm production with domestic and global markets and attract massive investments for building up post-

harvest infrastructure. Accordingly a Model APMC Act was finalized in 2003 and circulated to states by GoI. All state governments were required to amend the state Agricultural Produce Marketing Regulations Act and make changes which should be in tune with the Model Act.

In view of the changes made in APMC Act, direct marketing, contract farming, corporate entry into agricultural markets etc. have begun to make inroads into agricultural marketing. Keeping this in mind, it is necessary to observe the role of emerging marketing channels in agriculture and benefits to producers and consumers. Accordingly a study entitled *“Impact of Emerging Marketing Channels in Agriculture Marketing-Benefit to Producers-Sellers and Marketing Costs and Margins of Major Agricultural Commodities”* has been sponsored by Ministry of Agriculture, Government of India. This study is especially important because the supply chain in India is inefficient because a large number of intermediaries are present in agricultural marketing. The presence of intermediaries in India is a substitute for inadequate infrastructure. These intermediaries perform the distribution function as produce is normally consolidated at the village markets and reconsolidated again by intermediaries at least two to three times before it reaches the final consumer. There is wastage in the supply chain which is dominated by traders. The margins involved also inflate the final price paid by consumers. A more integrated market structure where the farmer is provided both backward and forward linkage will therefore help to minimize inefficiencies in the marketing system. Private players can organize procurement networks at regional and national level and also accommodate logistics such as direct purchases from farmers, transport, storage, cleaning, sorting and grading. The present study is an attempt to compare the benefits and constraints for agents trading in the traditional marketing channel (TMC) and emerging marketing channel (EMC). The study is undertaken for the state of Maharashtra (Nashik district) for two horticultural crops (one vegetable and one fruit) - namely onion and pomegranate.

1.2 Objectives of the Study:

The “emerging” marketing channels are supposed to reduce transaction costs and ensure that high margins maintained by intermediaries in the supply chain are reduced so

that the farmer benefits and gets a better price as compared to sale in regulated markets. Keeping this in mind the study has the following objectives:

1. To analyze the share of the farmer in the final consumer's rupee in an emerging marketing model vis-à-vis the traditional marketing channel;
2. To analyze the degree of market efficiency and incidence of post harvest losses in emerging marketing channel vis-à-vis traditional marketing channel;
3. To note the market practices and services of agencies involved in the emerging channel and observe if they are superior to that of traditional channels;
4. To analyze the constraints faced by farmers and different market functionaries in the emerging marketing channel as compared to the traditional marketing channel.

Deepak Fertilisers and Petro Chemicals Corporation Limited (DFPCL) has been chosen as a case study to observe the emerging channel and compare it with traditional channel. As mentioned earlier, crops selected were onion and pomegranate which are important horticultural crops in Maharashtra. These crops are mainly concentrated in Nasik district and hence this district was selected as sample district. DFPCL also has its centre in Nasik which is involved in giving advisory services to farmers and also conducting marketing operations.

1.3 Review of Literature:

In the previous section, the objectives of the study were noted. However, before observing the findings of our study, a brief review of literature on studies related to marketing costs and margins is attempted.

Elenchezian and Kombairaju (2003) compared the marketing efficiency of Farmers' Market with Central Vegetable market by collecting data from 90 farmers from three Farmers' Market in Madurai city. Major vegetables viz. brinjal, bhendi, tomato and small onion were considered for detailed analysis. They noted that two marketing channels existed in the markets for selected commodities, i.e. first starts from farmers and ends with consumers, while another starts with farmers flows through commission agent, wholesaler cum retailer, retailer and finally the ultimate consumer. The farmer's share in consumer rupee was as high as 95 percent in channel I for small onion, while it was very low in Channel II (55 percent). The marketing efficiency was higher in channel I with 16.02 percent for onion as compared to 2.44 percent in channel II. Thus, marketing efficiency in

farmer market was higher than central market. Authors concluded that Farmers Market helped in increased farmer's share in consumer's rupee and providing fresh vegetables to consumers at relatively low prices.

Khunt, *et al.*, (2003) studied the economics of production and marketing of pomegranate by collecting the data from 52 pomegranate growers from Bhavnagar district in 2001. The disposal patterns of pomegranate to different marketing centre of Gujarat of 48 selected farmers from Bhavnagar showed that pomegranate growers bears the highest cost of transporting the produce (50.46 percent of marketing cost) followed by packing cost (18.08 percent), grading (16.26 percent) and loading-unloading charges (11.47 percent). About 23.08 percent growers expressed that prices they received were not remunerative. Majority of the farmers sold their produce in Bhavnagar city, which makes the market buyers oriented and therefore leads to the problem of unremunerative price.

While studying the marketed surplus and marketing cost of vegetables in Uttaranchal, Kumar and Arora (2003) observed that there was 93.01 percent marketed surplus in case of onion. The important determinants of marketing cost of vegetables were packing cots, transportation and commission charges. The commission was an important component in almost all the vegetables. Improper weighing practices, lack of market information, delay in sale process, delay in payment and lack of effective market regulations were important problems noticed in the selected area.

Murthy and Subrahmanyam (2003) studies the impact of arrivals on prices of onions and observed that there was negative and significant relationship between them indicating that an increase in the prices of onion would reduce the supply of onion to the market and vice versa.

Perumal and Mohan (2004) studied the onion production and market arrivals in Dindigal onion market of Tamil Nadu and observed that imposition of five percent cess on onion in the Madurai and Dindigal markets have created price disparity. Therefore, traders and farmers have demanded that the government should remove cess from onions and ensure price stabilization.

Shroff, Sangeeta (2004) studies the price spread and marketing costs of onions in the markets of Lasalgaon and Pune of Maharashtra state. Author observed that marketing of onions takes place in regulated markets through auction method and farmer sell it to the wholesalers through the commission agent. The marketing channel observed in the selected market was Farmer, Commission Agent, Wholesaler, Retailer and Consumer. The

producer's share in consumer rupee was 45.33 percent in Lasalgaon and 41.88 percent in Pune market. Thus, the share of the farmer in the retail price was less than half the retail price, the balance being accounted by marketing costs and margins. All farmers responded that although transport to APMC is easily available and loading and unloading is done timely, the transport charges are very high. The study suggests reduction in the length of the marketing channel and also encouragement of cooperative marketing so that farmers can benefit from scale economies.

Pawar and Misal (2005) studied the behaviour of prices and arrivals of pomegranate in Western Maharashtra. The data was collected from the Solapur district APMC for the period 1991-2000. They observed that arrivals of pomegranate were maximum during August, December, July and September and lowest were in the month of May. The highest prices of pomegranate were in the month of February while lowest prices were in the month of April. They also observed a negative relationship between arrivals and prices.

Malaisamy, *et al.*, (2008) studied economic analysis of supply chain management and marketing efficiency of fruits and vegetables in Tamil Nadu and observed that in case of onion, two marketing channels prevailed in Dindigul, Oddanchatram and Trichy markets. In the first channel, producer, commission agents, wholesalers, retailers and consumers participated in the process of marketing. However, producer, commission agent, retailers and consumers participated in the second marketing channels. They observed that farmer's share in consumer's rupee was varied between 60.1 to 75.5 percent. It was found to be higher in Channel II in all the three markets compared to Channel I. This is because of the fact that direct purchase of onion by retailers from commission agents. They also noted that this type of marketing channel was not common and more than 70 percent of onion is marketed through wholesaler to retailer from commission agent. Thus, commission agent plays a major role in marketing of onion in three selected markets. Authors suggested that as stored onion fetches better prices, storage facilities should be provided to the farmers.

Murthy *et al.*, (2009) conducted a study on marketing and post harvest losses in fruits. The study related to four fruit crops, including pomegranate. The study noted that with respect to pomegranate, the farmer's share in terminal price is 50.15 percent; marketing costs are 20.98 percent while marketing margins are 28.87 percent. The marketing efficiency ratio was 1.01. An important issue in the study was to observe the

post harvest losses in fruits. In case of pomegranate, it was observed that the total losses at different levels of handling were 35.44 percent consisting of 9.86 percent at field, 10.10 percent at wholesale and 15.48 per cent at retail level. Losses at field level were due to disease, while the transit and wholesale losses were due to injury causes by friction which damaged the fruit. At the retail level, drying of skin and over ripening, damaged the fruit. The study concluded that at the macro level, India annually loses about Rs 13, 569 crores of fruits (based on 30 percent loss). The study also noted that, the reduction in post harvest losses is complementary means for increasing production, i.e. the cost of preventing losses is less than producing the same additional quantity of fruits.

A study on organized retailing of fresh fruits and vegetables was conducted by Rasheed et al., (2010) and others in a vegetable growing cluster in Hyderabad. The study observed that producers benefit in terms of better price realization in case of sales to organized retail as compared to *mandi*. The farmers also saved on marketing costs, especially commission charges. Further in case of sales to organized retail there was digital weighing system, which did not exist in the *mandi*. The *mandi* also lacked basic infrastructure such as storage facilities, parking and clean drinking water. However, the study noted that while the *mandi* purchased all the produce brought by the farmers, the purchases by retailers was very limited and hence all farmers could not benefit from the better marketing operations of organized retailers. Finally it was pointed out in the study that some organized retailers also provided inputs and technical advice to farmers.

From the above, it can be observed that different studies have observed different marketing channels in marketing of agricultural produce and also varied marketing costs and margins.

1.4 Methodology:

The present study is conducted in the state of Maharashtra covering two horticultural crops namely pomegranate (fruit) and onion (vegetable) and deals with the state of Maharashtra. The study is based on both primary and secondary data.

In order to observe the supply chain of the emerging channel and traditional channel, primary data is collected from the following respondents to whom a detailed questionnaire is addressed:

- (1) Farmers
- (2) Intermediaries
- (3) Retailers
- (4) Consumers
- (5) Market Committee Members

The sample size for the survey of farmers is as follows:

Crop	Traditional channel	Emerging Channel
Onion	35	12
Pomegranate	35	05

The sample size for other intermediaries is as follows for onion and pomegranate

Intermediary	Traditional channel	Emerging Channel
Intermediary	5	5
Retailer	5	5
Consumer	5	5

A focus group discussion with the Committee members of APMC was also held in order to get a clear picture of market charges, market practices, etc. Primary data for both crops is collected from Satana taluka of Nashik district.

Tabulation of the data is carried out by using simple statistical tools to observe the share of farmer in terminal price in case of both traditional and emerging channel. The post harvest losses, market practices and constraints faced are also observed using field level data. The Modified Measure of Marketing Efficiency (MME) (Acharya's Method) was calculated using the formula:

$MME = FP / (MC+MM)$, where FP is price received by farmer, MC and MM are marketing costs and marketing margins respectively.

Secondary data is also used to support our analysis and is collected from various government reports and websites.

1.5 Limitations of the Study:

The main limitation of the study is that as per the study design, it was not possible to get 35 farmers in Emerging Marketing Channel (EMC) for both crops namely onion and pomegranate. This is because DFPCL which was our case study for emerging channel still has limited purchase operations. In fact any emerging channel would have limited purchase operations in the early stages of its business. Their purchase operations are spread over several centres in the state and hence it was not possible to get a sample of 35 farmers from one particular district in the state. However, a field visit was also made to other districts where DFPCL has its centre and makes purchases. Farmers were interviewed in order to get qualitative data. Therefore although the sample size with respect to EMC is limited, the findings still reveal the marketing operations of DFPCL. Interviews were also held with senior officials in their Head Office, in order to get better insights on their agricultural operations.

1.6 Organization of the Report:

Chapter 1 is the introductory chapter, followed by Chapter 2 which explains the market reforms in both traditional and emerging marketing methods. In Chapter 3, the sampling, socio-economic profile of sample farmers, supply chain observed in the sample district, etc. is discussed. In Chapter 4, a comparison is made of the benefits and constraints for the agents trading in TMC and EMC. The broad conclusions and policy implications are discussed in Chapter 5.

Chapter 2

Agricultural Marketing Reforms: Traditional and Emerging Marketing Methods

2.1 Introduction:

It was observed in earlier chapter that in order to improve the marketing system of farm products, wholesale agricultural produce markets began to be regulated in the 1950s and 1960s, when each state began implementing its Agricultural Produce Marketing Committee (APMC) Act. The APMCs were established in each state by the respective state governments with a view to regulate the marketing of agricultural produce in market areas. However, after nearly five decades of the implementation of the APMC Act, an amendment was proposed. This was mainly because it was felt that the provisions of the APMC Act were not compatible with free and competitive market structure sought by the government. The Act it was felt adversely affected farmers by restricting their market options and compelling them to sell in the market yards. A Model APMC Act which would improve the efficiency of the marketing system and encourage private sector investment in agricultural marketing was therefore proposed by a committee constituted by the government. The aim of the amended act was complete transformation of agricultural marketing in India so as to make it more market and growth oriented. The Model APMC Act was finalized in 2003 and circulated to states by GoI. All state governments were required to amend the state Agricultural Produce Marketing Regulations Act and make changes which should be in tune with the Model Act. Accordingly, the state of Maharashtra followed suit and made suitable amendments in the Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963. The Act was amended in June 2006 and rules were framed in June 2007. When the APMC Act was framed in 1963, the focus was on regulation of marketing but in the amended Act, the concept of development was also introduced. The title of the amended Act is “Maharashtra Agricultural Produce Marketing (Development and Regulation) (Amendment) Act, 2006.”

In the light of the above, in this chapter an attempt is made to discuss the features of the marketing reforms in both Traditional Marketing Channel (TMC or TC) and Emerging Marketing Channel (EMC).

2.2 Features of Traditional and Emerging Channels:

2.2.1 The Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963:

The regulation of markets in India had very limited progress in the country prior to independence. However, soon after independence, the Planning Commission in its First Five Year Plan laid stress on regulation of markets which led a number of states to take steps in the direction of enacting legislation on agricultural marketing. Accordingly the state of Maharashtra also enacted the Maharashtra Agricultural Produce Marketing (Regulation) Act in 1963. With the implementation of this Act, various legislative measures were passed which aimed at improving marketing of agricultural produce by regulating marketing procedures, sales, practices and providing the needed market information to facilitate informed and free competitive conditions of marketing so that the producers-sellers would be able to strike the best possible deals. Under this act, all notified agricultural commodities, about 286 in number, grown within a notified area of a regulated market or mandi, if sold wholesale must be marketed through the designated mandi.

The main feature of regulated markets is that the system of sale is designed to be open and an opportunity is provided to the producers to sell their produce by a method which ensures the possibility of the presence of several buyers and a competitive bidding for every lot sold. Thus vigorous competition among buyers results in higher prices for producers. Further, the net returns to the cultivators would also be increased by market regulation eliminating superfluous charges and minimizing the various costs of handling. This practice would protect farmers from exploitation by middlemen and get competitive prices. The regulated markets are designed to ensure that the various market charges are fixed, correct weighing of produce is assured and arrangement is made for the settlement of disputes. Grading of agricultural produce was also introduced in the regulated markets to enable the farmers to get the benefit of it.

The main market functionaries in regulated markets are the commission agents, traders, brokers, processors, weighmen, helpers and hamals, who must hold a license from APMC to operate in the mandi. The market fees range from 0.75 percent to 1 percent of the value of produce sold. Agricultural Produce Market Committees are constituted for each regulated market and comprised of farmers, traders and other market functionaries who are responsible for day-to-day management of the market. They control and regulate admissions to the market, issue and renew trader licenses, and suspend or cancel them. The members of the APMC are elected by members of agricultural credit societies and

other cooperative societies and by village panchayats within the area. The APMCs are supervised by the Maharashtra State Agricultural Marketing Board (MSAMB).

The APMCs generate income by charging market fees, license fees and rentals. A part of the APMC income is passed on to MSAMB to undertake infrastructure development. A number of schemes are promoted by MSAMB for construction of internal roads, road asphaltting, providing drinking water facilities, auction platforms, auction halls, warehouses, cold storage, common export facility centres, etc. The Marketing Boards also provides training, extension and financial support for modernizing infrastructure and other development initiatives in regulated markets by way of loans and subsidies.

Table 2.1: Division wise break-up of APMCs in Maharashtra

No.	Division	Main Market	Sub Market
1	Konkan	20	34
2	Nashik	51	112
3	Pune	43	122
4	Aurangabad	33	72
5	Latur	48	91
6	Amravati	55	101
7	Nagpur	45	77
	Total	295	609

Source: www.msamb.com

In Maharashtra there are 295 main market yards and 609 sub market yards. The division-wise break up of APMCs in Maharashtra is indicated in Table 2.1 and their classification according to income is indicated in Table 2. It can be observed from Table 2.1 that maximum main markets were in Amravati division while Pune division had maximum sub-yards.

Table 2.2: Classification of APMCs (2007-08)

No.	APMC class	No. of APMCs	Total Income
1	"A"	42	Above Rs 1 crore
2	"B"	58	From Rs 50 lakhs to Rs 1 crore
3	"C"	70	From Rs 25 lakhs to Rs 50 lakhs
4	"D"	125	Less than Rs 25 lakhs
	Total	295	

Source: www.msamb.com

It may also be noted that besides enacting the Market Regulation Act so as to promote orderly marketing of agricultural marketing, all round efforts were made to improve the marketing infrastructure in the country. Roads and rail roads have been constructed which have helped to shorten distances and have brought villages, markets and

towns nearer and easily accessible. State warehousing Corporations have been set up to increase the withholding capacity of cultivators so as to avoid sales when there are glut conditions in the market. Market intelligence has improved and Market Committees make arrangement for dissemination of information on the current price. The institutional credit agencies also provide crop loans as well as long term loans to farmers for agricultural operations. Support prices are also announced by the government so as to give stability to prices in the post harvest season.

From the above it may be concluded that regulation of markets had several positive features such as sale through auction method, reliable weighing, standardized market charges, payment of cash to farmers without undue deductions, dispute settlement mechanism, reduction in physical losses of produce and availability of several amenities in market yards.

However, although market legislation greatly improved marketing of agricultural produce, a number of enquiries and studies (eg. Dantwala, M.L. 1951, Shirname, T.G. 1956) observed that the intended regulation of markets had not always been carried out and at times proved to be ineffective. These studies indicated that improvements had taken place in the marketing of agricultural produce, for example reduction in market charges, standardization of weights and measures and improvements in methods of sale. The reports however emphasized that certain malpractices were persistent which made the producer remain indifferent to or be reluctant to sell his produce in the markets. The market functionaries accustomed to unrestricted freedom, could not reconcile to the spirit of the Act and tried to counteract its repercussions on the strength of their collective influence, power and action. In fact in some markets near monopsony conditions existed, where only a few buyers controlled the whole market. They were thus in a position to dictate the prices to the producer. The concerted action on the part of the traders thus frustrated the purpose of the Act and the classic solution of sale by auction method was defeated.

Market legislation had several other limitations. The provisions of the APMC Act are not compatible with free and competitive market structure sought by the government. The Act adversely affects farmers by restricting their market options and compelling them to sell in the market yards. This leads to rise in transaction costs. The Act also hampers the development of wholesale markets in the state by restricting their establishment to the public sector. The provision that no person could carry on trade in agricultural produce

without license of the APMC essentially granted monopoly power to the APMC. A study (Acharya 2006), identified several problems associated with regulated markets. Since the APMCs do not allow the traders to buy from farmers outside the specified market yards or sub-yards, the cost of marketing increases. The area served per market yard is high and long distance travel to reach the market yard is a disincentive for farmers with small surplus to sell. Several markets are also poorly equipped. In several states, elections of APMCs are not held regularly, and hence they are superseded by the government and administered by bureaucrats, depriving them of the characteristic of being farmer-dominated managerial bodies. The staff remains overly occupied with the collection of market fees and construction work rather than market development. Congestion in the market yard delays the disposal of farmer's produce, frustrating the farmers. In several markets, malpractices by traders persist, such as late payment, deduction from payment and non issue of pay slips. In some markets, the market functionaries have formed strong associations, barricading the entry of new functionaries. In some cases, market fee has become a source of revenue for the government. By and large, APMCs have emerged as some sort of government sponsored monopolies in the supply of marketing services, with all the drawbacks and inefficiency associated with public sector monopolies.

In view of the above inherent bottlenecks in the APMC Act and also new challenges and opportunities associated with agricultural marketing, not only in Maharashtra but across all states, the GoI felt it was necessary to undertake market reforms through a change in market legislation. This matter has been under continuous scrutiny as agricultural marketing and exports of agricultural commodities were assuming increasing importance due to liberalization of trade, need for better supply management and need to improve infrastructure and market information. As mentioned earlier, an Expert Committee on "Strengthening and developing Agricultural Marketing" under the chairmanship of Shri S. Guru was appointed by GoI in December 2000. This committee (Guru Committee) reviewed the entire system of marketing of agricultural commodities and submitted its recommendations to the government in June 2001 and recommended the requirement of a vibrant and dynamic marketing structure and system to meet the challenges emerging out of globalization in the post WTO period. An Inter-Ministerial Committee (chairman: Shri R.C.A. Jain, Additional Secretary, Ministry of Agriculture) was set up to examine the report and the legislative changes required for the implementation of this report. The Inter-Ministerial Task force recommended the

formulation of a Model APMC Act which would improve the efficiency of the marketing system and encourage alternative markets with private sector investment in agricultural marketing. The present marketing system of sales through regulated markets had limitations and alternative marketing systems which provide better returns to farmers and reduce inefficiencies were required. The alternative marketing systems will ofcourse operate parallel to and in addition to the present system of auction sales in regulated markets. Issues that plague supply chains in India include non – transparent pricing, limited investment, primitive sorting and grading facilities, post harvest losses, etc. Therefore the purpose of the alternative marketing structure is to establish modern efficient trade practices as a catalyst for change in the market towards improved transparency and efficiency. Accordingly a Model APMC Act was finalized in 2003 and circulated to states by GoI. All state governments were required to amend the state Agricultural Produce Marketing Regulations Act and make changes which should be in tune with the Model Act.

2.2.2 Amended Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963:

As noted earlier, all states were required to amend their APMC Act, which had to be based on the Model Act, circulated by GoI to the states. Accordingly, the state of Maharashtra followed suit and made suitable amendments in the Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963. The Act was amended in June 2006 and rules were framed in June 2007. When the APMC Act was framed in 1963, the focus was on regulation of marketing but in the amended Act, the concept of development was also introduced. The title of the amended Act is “Maharashtra Agricultural Produce Marketing (Development and Regulation) (Amendment) Act, 2006 and the following amendments are made in the Act:

1. **Competitive Markets:** As per the APMC, 1963 Act, the farmers were not in a position to enter into direct contact with the processors/manufacturers located outside the market area as the commodity had to be channelized through regulated markets. However, as per the amended Act, and rules framed thereafter known as Maharashtra Agricultural Produce Marketing (Regulation) (Amendment) Rules 2007, provision is made for Private markets, Farmer- Consumer Markets and Direct Marketing.

(a) **Private Markets:** Any person, Partnership firm, Co-operative society, NGO or company can establish a Private market. Any person desiring to establish a Private

market in one or more than one market area, has to make an application to the Director of Agricultural Marketing (henceforth called Director) for grant of license. Further, no private market can be located within the market area of the Bombay Agricultural Produce market Committee and no private market can be located within the radius of ten kilometers from the main yard of the existing Market Committee at district place having Municipal Corporation and five kilometers from the main yard of the existing Market Committee at other district places, taluka places and the sub-yards of any Market Committees. Necessary infrastructure like auction hall, sheds, godowns, cold storages, electrical weigh bridges, internal roads, drinking water, etc. with an investment of Rs 5 crores, including the cost of land near the district place with Municipal Corporation or similar kind of infrastructure with total investment of Rs 2 crores near the main market yards of other district places, and similar kind of infrastructure worth Rs one crore at all other places, is to be created by the applicant. Agricultural produce should be sold by open auction in private markets.

The license fee for establishing a private market near the district places having Municipal Corporations shall be Rs 50,000 and Rs 25, 000 for all other places. A Bank Guarantee worth Rs 20 lakhs is to be deposited with the Director while applying for a license to establish private markets near the district place having Municipal Corporation and Rs 5 lakhs is to be deposited with the Director while applying for a license to establish private markets at all other places. A license of a private market can also be granted to the Commodity Exchange registered under the Forward Market Commission (www.msamb.com)

- (b) ***Farmer-Consumer Market*** : Any person, partnership firm, Co-operative society, NGO or Company can establish a Farmer Consumer market in one or more than one market area for which a license has to be obtained from the Director. In this market the transactions will take place directly between farmers and consumers. However, no Farmer-Consumer market shall be established within the market area of the Bombay Agricultural Produce Market Committee and shall be established on minimum one acre of land with clear title or leasehold title having the lease agreement for a minimum period of thirty years. A Farmer-Consumer market should have infrastructure like auction hall, sheds, drinking water facilities, toilets, internal roads, etc with total investment of not less than Rs 10 lakhs. The

license fee for this market is Rs 10,000 and a Bank Guarantee of Rs 1 lakh is to be deposited with the Director while applying for license to establish Farmer-Consumer market. The farmer in the farmer-consumer market is not permitted to sell more than 10 kg of fruits and vegetables or other perishable agricultural produce and fifty kgs of foodgrains or other non-perishable agricultural produce to one consumer. (www.msamb.com).

- (c) **Direct Marketing:** Any person, Partnership firm, Co-operative society, NGO or Company can obtain a license for direct marketing in one or more than one market area. This provision is likely to give a boost to processing units, exports and retail business. The license fee for direct marketing is Rs 50,000 for operating in the whole state and Rs 15,000 per Division. A Bank Guarantee worth Rs 15 lakhs is to be deposited with the Director of Marketing while applying for license for direct marketing for operating in the entire state or more than one Division and Rs 10 lakhs for one Division. However, government organizations and local authorities are exempted for payment of Bank Guarantee. No license for establishing a Private market or Farmer-Consumer market can be granted to the direct marketing license holder. The direct marketing license holder has to pay the market fee on the commodities purchased by him within a period of 15 days of purchase to the Maharashtra State Agricultural Marketing Board who has to distribute the same to the Market Committees concerned within a period of one month (www.msamb.com).

Any dispute between the direct marketing license holder, private market license holder, farmer-consumer market license holder and the Market Committee, agriculturist, trader, consumer can be filed by the complainant himself or his authorized representative to the Director with the court-fee stamp of Rs 20 along with the necessary documents, within a period of sixty days from the date of arising of the dispute. The dispute may relate to payment to be made to the farmers for purchase of agricultural produce from him while dealing in direct marketing, private markets or farmer-consumer markets. The dispute may also be related to weight of agricultural produce, price, fees, etc. (www.msamb.com)

- (d) The government may declare certain markets as Special Commodity markets on the basis of arrivals, turnover, and geographical area. These Special Commodity

markets are to have modern infrastructure and storage facilities as per the requirement of the agricultural produce.

2. **Contract Farming:** Contract farming refers to a system for the production and supply of agricultural and horticultural produce by farmers under advance contracts with the main aim of providing an agricultural commodity of a type, at a specified time, price and in specified quantity to a known buyer. An amendment has been also made in the APMC Act, 1963 to make provision for contract farming. As per the amended Act (Maharashtra Agricultural Produce Marketing (Development and Regulation) (Second Amendment) Rules, 2007 “Contract farming means farming by a Contract Farming Producer under written agreement with Contract Farming Sponsor to the effect that farm produce shall be purchased by the Contract Farming Sponsor as specified in the agreement” (www.msamb.com). Any dispute arising out of the Contract Farming Agreement shall be referred to the District Deputy Registrar of Co-operative Societies who has to give his decision within 30 days after giving an opportunity of being heard to the concerned parties.

Under contract farming the farmer will not be deprived of his right to the title of his land under any circumstances and the agricultural produce will be directly delivered from farm yards.

Thus from the above it can be observed that amendments have been made in Maharashtra APMC Act, 1963, according to which private players will be allowed to open and operate in agricultural markets, where farmers can sell their produce. It will bring an end to state monopolies and result in competitive pricing for farmers. There is no compulsion for farmers to bring their produce to the market yard. They can directly sell the produce to private players, food processing industries and retailers.

2.3 Comparison of Features of Traditional and Emerging Channels:

It was observed in the previous section that Maharashtra APMC Act, 1963 had been amended and according to the amended Act, farmers in the state are in a position to sell their produce in open markets and not remain confined to APMC. Hence with the amended Act the following changes have taken place:

2.3.1 Implementation of Agricultural Marketing Reforms under amended Act:

The Maharashtra APMC Act, 1963, has been amended so as to promote competitive marketing. After amendment the following marketing reforms can be observed:

- Direct marketing - 72 Licenses issued
- Private markets - 07 approvals given
- Farmer-Consumer Markets - 33 locations
- Contract farming – 1 lakh hectares under various crops
- Single License System – 09 private players
- Special Commodity markets – 20 festivals organized

Efforts are also being made to promote Public Private Partnership. The state has proposed the setting up of a Terminal market for fruits and vegetables in the private or joint sector at Mumbai, Nashik and Nagpur. The project will be implemented by competitive bidding process. The key objective of terminal market is to ensure a more transparent, efficient and modern marketing system for perishable fruits and vegetables with few or no middlemen so that farmers/growers/producers can receive more remunerative prices for their produce. The terminal markets provide multiple options to farmers for disposal of produce. Such markets are expected reduce post harvest losses and increase farmer's realization. Maharashtra State Agricultural Marketing Board (MSAMB) is nodal agency for the Mumbai and Nashik terminal market. Further Modern markets in Hingoli and Aurangabad district through Public Private Partnership are under preparation.

Marketing infra structure is also undergoing major changes. Under Marknet project computerization of 291 APMCs and 54 submarkets is complete. Agri-Export Zones (AEZ) have been set up in the state and six facility centers for export have been created. The concept of AEZs aims at strengthening the entire value chain in a comprehensive manner for an identified crop coming from a geographically contiguous manner. Rural godowns, and onion storage structures are being constructed and grading and standardization of produce is encouraged. Television to disseminate arrival and price information of agricultural commodities has made inroads to strengthen infrastructure. A Memorandum of Understanding (MoU) between Reuters and MSAMB was signed in May 2007 to provide information about market arrivals, prices, weather forecast and market guidelines

to farmers through mobile telephones. More than 10,000 farmers have subscribed to this facility.

2.3.2 Comparison between TMC and EMC:

It can be observed that under amended APMC Act, there exists scope for private investment in agricultural markets and also direct buying of produce from farmers by traders and processors. Thus the monopoly of APMC controlled markets has been extinguished and the scenario related to agricultural marketing has begun to change.

In view of the changes made in APMC Act, direct marketing, contract farming, corporate entry into agricultural markets etc. have begun to make inroads into agricultural marketing. The Act of 1963 led to the supply chain in India becoming inefficient because of the presence of a large number of intermediaries in agricultural marketing. The presence of intermediaries in India is a substitute for infrastructure. These intermediaries perform the distribution function as produce is normally consolidated at the village markets and reconsolidated again by intermediaries atleast two to three times before it reaches the final consumer. The supply chain is dominated by traders who operate on high margins for not much value added. In such a process there is wastage and huge losses besides both the farmer and consumer lose in terms of price. A more integrated market structure where the farmer is provided by both backward and forward linkage as incorporated in the amended Act will therefore help to minimize on inefficiencies in the marketing system.

Corporate units like Reliance, Godrej, Deepak Fertilisers and Petro Chemicals Ltd, ITC, Bharati group, etc. have entered agricultural markets to capitalize on opportunities such as processing, marketing and export of agricultural products. These companies have linkages with small and large farmers to source the produce, besides procuring through contract farming. ITC is linking farmers across the country on the online platform through e-choupal, while Reliance Retail has an ambitious “field to fork” retail plan whereby it directly sources produce from fields, routes it through its natural distribution centers and supplies it to consumers. Mahindra Shubhlabh came into existence to provide total farm solution to the problems of farmers. Other companies such as Hindustan Lever Limited, Nijjer and Pepsico are involved in contracts where produce is processed into value added food products for domestic as well as export markets. Deepak Fertilisers and Petro Chemicals Ltd through its Agribusiness and Farming Solutions (ABFS) also entered into

agricultural marketing. DFPCL through its ABFS Division is involved in agricultural marketing and provides various services to farmers. The agronomists provide complete agronomic advice to farmers and work with them so as to increase yields. The company has well equipped laboratory for soil, water, plant and fertilizer analysis, in-house availability of all necessary expertise required for crop production and produce marketing, certified pack houses and also maintains systematic monitoring of consignments in the supply chain. The company besides procuring produce from farmers also provides cost effective technology to registered farmers. Thus it can be observed that changes are taking place in agricultural marketing with corporate entry and amendments made in APMC Act. While marketing through TMC involves a number of intermediaries which add to marketing costs and margins, there is scope in EMC to reduce the supply chain, marketing costs and margins and thus improve marketing efficiency.

Chapter 3

Sampling, Methodology and Socio-Economic Profiles

3.1 Backdrop:

It was observed in Chapter 2 that contract and corporate farming are gaining popularity with amendment to APMC Act. The study on emerging marketing channels and its comparison with traditional channel is therefore conducted to observe the supply chain and the benefits accruing to farmers in both the systems. Maharashtra ranks first in the country with respect to area and production of fruits. Unlike fruits, Maharashtra is not the leader in area and production of vegetables but ranks seventh in the country. More than half the area under vegetables in the state is under onion. Accordingly this study has been conducted for the state of Maharashtra for two horticultural crops namely onion and pomegranate. Deepak Fertilisers and Petro Chemicals Ltd. (DFPCL) has been selected as an emerging channel in order to observe if this vertically coordinated supply chain has eliminated or reduced inefficiencies in agricultural marketing which arise due to multi-layer intermediaries operating with high margins and depriving the farmer a fair share in the price paid by final consumer. DFPCL has nine centres in the country which provide advisory services to farmers in the form of plant nutrition solutions, pre and post harvest technology dissemination, and Global Gap certification. The company also procures fruits and vegetables for domestic buyers, international buyers and processors. Out of the nine centres providing advisory services, seven are located in Maharashtra and the operations of the company extend to major horticultural crops of the state. Accordingly, DFPCL was selected as a case study for emerging channel in agricultural marketing.

In order to study marketing operations in TMC, the district selected was Nashik and taluka selected was Satana. Maharashtra is a leading producer of onions and pomegranates and one-third of onions produced in the country are produced in Maharashtra while in case of pomegranates it is 70 percent. The same can be observed from Table 3.1 In Maharashtra, Nashik is the leader in both onion and pomegranate production and contributes to about 40 percent of onion as well as pomegranate production of the state. Hence sample farmers for TMC were selected from Nashik district. DFPCL

also operates a centre in Nashik to provide advisory services to farmers as well as perform marketing operations.

Table 3.1: Share of Maharashtra in Area and Production of Pomegranate and Onion (2007-08)

Particulars	Pomegranate		Onion	
	Area (000 ha)	Production (000 mt)	Area (000 ha)	Production (000 mt)
India	122.2	858.1	804.6	12156.2
Maharashtra	90.5 (1)	596.2 (1)	254.5 (1)	4003.1 (1)
% share of Maharashtra	74 (1)	69.5 (1)	31.6 (1)	33 (1)

Note: Figure in brackets are all-India rank of Maharashtra.

Source: NHB 2008.

3.2 Profile of Nashik District:

3.2.1 Location and Geographical Units:

Nashik District is located between 18.33 degrees and 20.53 degrees North latitude and between 73.16 degrees and 75.16 degrees East Longitude at Northwest part of Maharashtra state, at 565 meters above mean sea level. The District has great mythological background. Nashik is also known as Mini Maharashtra, because the climate and soil conditions of Surgana, Peth, Igatpuri resemble with Konkan region. Niphad, Sinnar, Dindori and Baglan blocks are like Western Maharashtra (comprises of Nashik, Ahmadnagar, Pune, Satara, Solapur, Sangli and Kolhapur districts) and Yeola, Nandgaon and Chandwad blocks are like Vidarbha region (comprises of Amravati, Akola, Washim, Yavatmal, Buldhana, Nagpur, Wardha, Bhandara, Gadchiroli, Gondiya and Chandrapur districts). Nashik, Malegaon, Manmad, Igatpuri are some of the big cities situated in Nashik District.

Out of 15 blocks in the district, as many as 8 blocks viz Surgana, Peth, Igatpuri, Kalwan, Baglan/Satana, Dindori, Trimbakeshwar & Nashik are tribal blocks. The district is also identified as tribal district by the State Government. Many important rivers of Maharashtra originate in the district. Godavari which is popularly known as Ganga of South India originates at the holy place of Trimbakeshwar. Another major river is Girna. Other rivers are Darna, Mosam, Aram, Vaitarna, Manyad and Kadwa. Though average rainfall of the district is between 2600 and 3000 mm, there is wide variation in the rainfall received at various blocks. Most of the rainfall is received from June to September. The maximum temperature in summer is 42.5 degree centigrade and minimum temperature in

winter is less than 5.0 degree centigrade. Relative humidity ranges from 43% to 62%. The climate of the Nashik generally compares with that of Bangalore and Pune because of its pleasant nature. However in recent years the district is witnessing rise in temperature and rainfall is decreasing due to industrialization and fast deforestation.

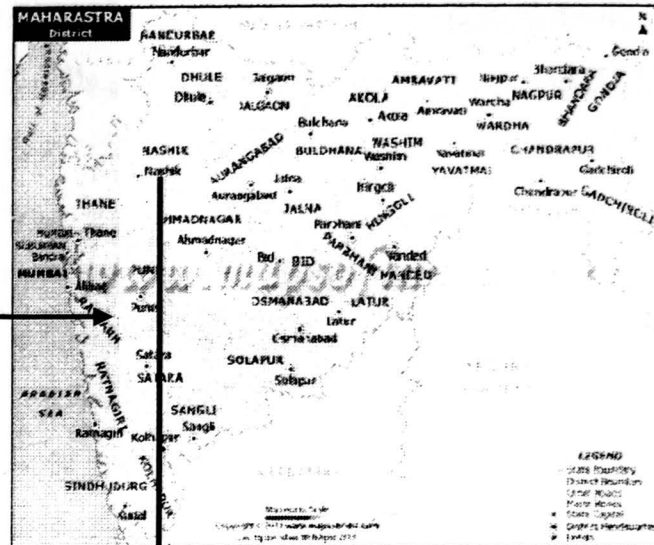
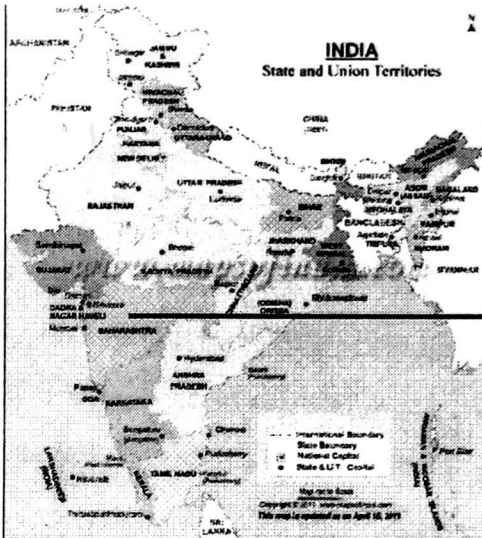
Bajra is an important crop in the district. However other crops like wheat, paddy and other cereals are also grown in various parts of the district. Paddy is mainly grown in Tribal belt i.e. Igatpuri, Peth, and Surgana blocks. Vegetables and Onion were the main cash crops since last 30 years. Because of large variety of vegetables and its supply to Mumbai, the district was known as the Backyard of Mumbai. After establishment of sugar factories, sugarcane has acquired an important position in the agricultural economy of the district. One sugar factory under private sector at Ravalgaon and other sugar factories under co-operative sector at Niphad, Ranwad, Palse, Materewadi and Vithewadi are functioning in the district. Economic development in the rural areas expedited only after establishment of sugar factories. The Government granted permission for starting four sugar factories under private sector and one such sugar factory in private sector has started functioning in Satana Block (Dwarkadhish Sugar Factory) This development was however concentrated around the existing sugar factories. Since last 20 years grape cultivation has acquired dominance on the agricultural economy of the district. Due to water shortage in Kalwan, Deola, Satana and Malegaon blocks, the farmers have shifted to pomegranate from sugar cane and grape crops. Some progressive farmers are cultivating flowers in green houses. These developments also indicate that the farmers in the district very quickly adopt to new technology and methods of cultivation. The district has been identified for the purpose of establishment of Wine Park and Food Park.

The climate in the district is also suitable for allied activities such as Dairy, Poultry, and Sheep & Goat rearing. There are two large units of poultry viz. C & M Groups and Ashok Kumar Hatcheries in Nashik. Few years back some farmers have tried to establish medium sized goat rearing units under stall-fed conditions. However the results are not encouraging. Dairy has been identified as a key economic activity under SGSY (Swarnajayanti Gram Swarojgar Yojana) in almost all the blocks. The district has unlimited potential for dairy activity. Infact all allied activities have great potential, as the gigantic urban market of Mumbai is at the doorstep of the district.

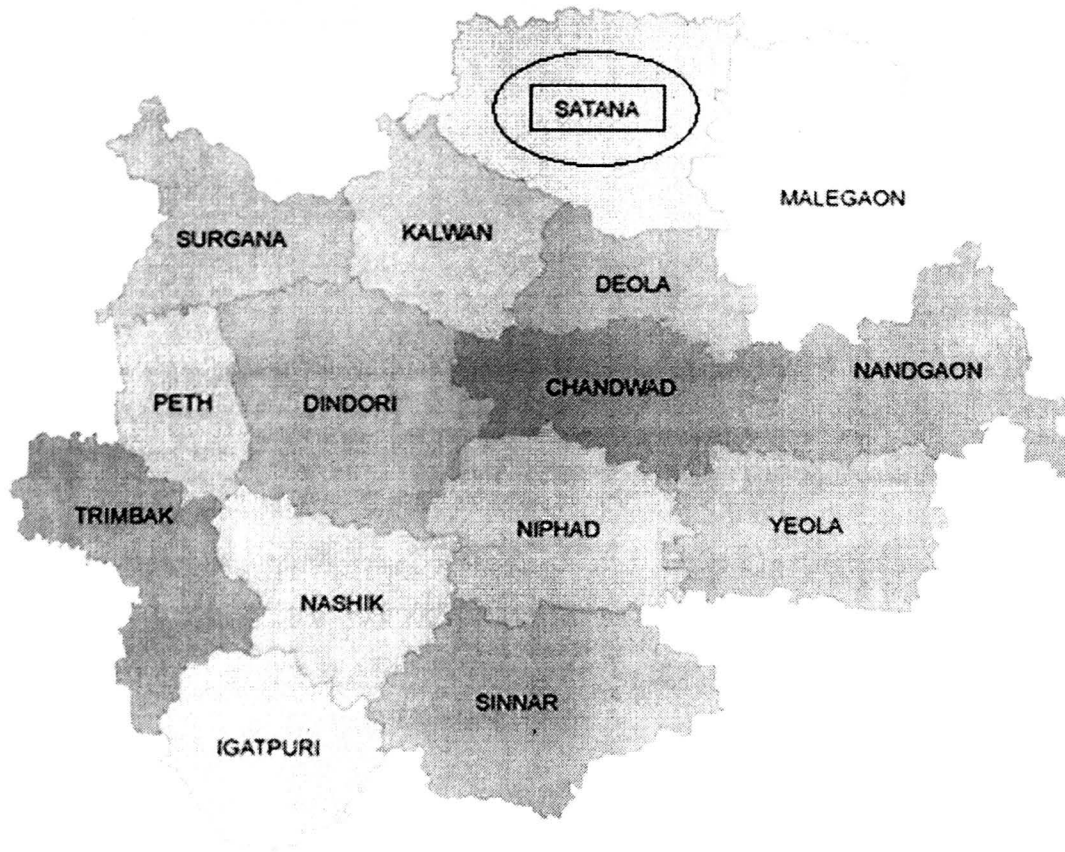
Map 3.1: Location Map of Nashik district

India

Maharashtra



Map 3.2: Tahsil Map of Nashik district



3.2.2 Socio-Economic Indicators:

In Table 3.2, selected socio-economic indicators of Nashik vis-à-vis Maharashtra are presented. The district accommodates about 5 percent of the state's population. While 61 percent of the population in the district is rural, it is lower (57.5 percent) in the state.

With respect to agriculture, it can be observed that while Maharashtra has 16.38 percent of gross cropped area (GCA) under irrigation, the same for Nashik is 45 percent. However, despite the district having nearly half its GCA under irrigation, the cropping intensity (106.33 percent) is far lower in the district as compared to the state (128 percent). This is probably because a major part of the area is under horticultural crops where double cropping may not be possible and these crops require protective irrigation. Foodgrains occupy 57.6 percent of GCA in the district. With respect to input use, fertilizer consumption per hectare as well as HYV coverage is much higher in the district as compared to the state. The productivity of many major crops is lower in the district as compared to state.

Table 3.2: Selected Socio-Economic Indicators: Nashik and Maharashtra

Particulars	Nashik	Maharashtra
Population Total (thousand)	4994	96879
(2001) Rural (thousand)	3056	55778
Urban (thousand)	1938	41101
Rural agricultural workers (% is to total workers)	62.40	54.96
Population Density (per sq km.)	322	315
Female per thousand males	927	922
Percentage of SC Population to total	8.54	10.20
Percentage of ST Population to total	23.92	8.90
Rural Literacy rate (percent) 2001	67.79	70.84
Human Development Index (2000)	0.51	0.58
Percentage of rural families below poverty line (2002)	40.4	35.7
Per capita income at current prices at 1999-00 series in Rs.	50077	47051
Share of agriculture sector in GDP/SDP (in 2007-2008 current prices)	19.59	13.80
Normal rainfall (in mm) June to Sept 2010	897.8	1319.0
Average size of holdings (2000-01)	1.67	1.66
Percentage of irrigated area to gross cropped area (in 2004-05)	45.02	16.38
Percent of groundwater irrigated area to NIA (2004-05)	45.18	64.88
Electricity use in Agriculture (% to total) 2008-09	25.88	17.44
Cropping intensity (%) 2004-05	106.33	127.89
No. of Primary Agricultural Cooperative Societies (2008-09)	1027	21248
No. of fair price/ration shops per lakh population (30.09.2009)	43	46
No. of banking offices per lakh population	5.2	6.9
No. of regulated markets per lakh ha of net sown area (2005-06)	2	2
Total road length per lakh population (2007-08)	91	77
Input use:		
Fertiliser (kg/ha) (2007-08)	164.5	109.7
HYVs coverage (TE2004-05) PJBW %	93.3	48.8
Wheeled Tractors (per 000 ha of NSA) 2003	18.12	6.04
Area under major crops (percent to GCA): 2009-10*		
Total Cereals	48.85	37.41
Total Pulses	8.78	15.17
Total Foodgrains	57.63	52.58
Total Oilseeds	9.72	17.20
Sugarcane	2.98	3.25
Cotton	4.88	15.46
Fruits and Vegetables*	8.93	3.82
Productivity (kg/ha): 2009-10		
Total Cereals	1009	1222
Total Pulses	497	714
Total Foodgrains	931	1075
Total Oilseeds	845	746
Sugarcane	70	83
Cotton	293	285

Notes: * Fruits and Vegetables relates to the year 2001-02, GCA-2007-08, Productivity of sugarcane in tons/ha

Sources: Economic Survey of Maharashtra, 2009-10; District Socio Economic Review of Nashik 2009.

3.2.3 Classification of Workers:

It can be observed from Table 3.3 that as far as main workers are considered 39 percent are cultivators and 21 percent are agricultural labourers. However, in case of marginal workers, 48.7 percent are agricultural labourers. Overall, majority of the workforce is engaged in agriculture and while this share is 60.4 percent in case of main workers, it is as high as 76.6 percent in case of marginal workers. Agriculture is therefore the dominant activity in Nashik district and taking into consideration main and marginal workers, about 62 percent of workers are employed in this sector.

Table 3.3: Economic Classification of Workers as per Population Census 2001: Nashik and Maharashtra

Sr. No.	Class of Workers	Nashik					
		Rural		Urban		Total	
		No.	% to Total workers	No.	% to Total workers	No.	% to Total workers
	Main Workers						
1	Cultivators	727117	54.7	20126	3.5	747243	39.1
2	Agricultural Labourers	389992	29.3	16695	2.9	406687	21.3
3	Workers engaged in Household Industries	22190	1.7	12937	2.2	35127	1.8
4	Others	190390	14.3	531893	91.4	722283	37.8
5	Total Main workers	1329689	100.0	581651	100.0	1911340	100.0
	Marginal workers						
6	Cultivators	74897	32.4	1529	3.5	76426	27.9
7	Agricultural Labour	127544	55.2	5871	13.6	133415	48.7
8	Workers engaged in Household Industries	7869	3.4	4682	10.8	12551	4.6
9	Others	20749	9.0	31092	72.0	51841	18.9
10	Total Marginal workers	231059	100.0	43174	100.0	274233	100.0
	Distribution of workers						
11	Total Workers	1560748	51.07	624825	32.25	2185573	43.77
13	Total Non-workers	1495492	48.93	1312731	67.75	2808223	56.23
14	Total Population of District	3056240	100.00	1937556	100.00	4993796	100.00

Source: GOM (2009), District Socio-Economic Review of Nashik 2009.

3.2.4 Land Use Pattern:

It can be observed from Table 3.1 that out of the total geographical area in Nashik, 56.86 percent is Net Sown Area (NSA). However, there are some talukas where NSA is above district average. In Satana, for example, which is selected as our sample district, the NSA is 89.69 percent. Thus, most of the land available in the taluka is used for cultivation. For the district as a whole, about 17 percent of geographical area is under forest. About 8 percent of geographical area in the district is under fallow land.

Table 3.4: Land Use Pattern: Nashik district (2004-05)

Sr. No.	Taluka	Total Geographical Area Hectares	% to total geographical area						
			Area under Forest	Land Not Available for Cultivation		Other uncultivated land	Fallow land		Net Area Sown
				Land put to non-agricultural uses	Barren and Uncultivable land		Current Fallow	Other Fallows	
1	2	3	4	5	6	8	9	10	12
1	Surgana	83746	51.57	1.10	0.36	0.93	2.39	4.22	39.44
2	Kalvan	89267	35.56	0.39	4.99	13.17	2.40	2.11	41.39
3	Devla	47264	16.52	0.11	0.00	6.52	4.70	0.25	71.90
4	Baglan/Satana	84703	0.00	0.13	1.84	2.09	4.21	2.04	89.69
5	Malegaon	187471	20.59	0.94	12.83	5.65	1.97	2.03	55.99
6	Nandgaon	108735	22.66	2.37	9.78	5.73	2.16	1.57	55.73
7	Chanwad	96763	9.21	0.06	8.72	9.76	4.41	1.28	66.56
8	Dindori	132315	16.43	1.60	2.34	6.54	11.01	1.62	60.47
9	Peth	56332	46.78	0.00	5.08	0.17	0.01	10.17	37.78
10	Tryambak	92524	36.39	0.03	5.27	10.86	4.04	4.04	39.36
11	Nashik	94116	1.02	7.25	22.39	7.58	5.78	16.19	39.78
12	Egatpuri	96783	2.07	0.08	10.46	27.61	5.06	3.69	51.03
13	Sinner	131563	10.42	0.22	13.61	8.37	6.00	6.01	55.37
14	Niphad	98188	1.08	0.47	8.66	7.32	1.32	2.09	79.07
15	Yewla	106041	5.57	0.35	9.73	7.93	8.04	1.75	66.63
Total District		1505811	17.29	1.06	8.51	8.16	4.42	3.74	56.82
Maharashtra		30758000	16.95	4.53	5.61	7.85	4.28	3.91	56.86

Source: GOM (2009), District Socio-Economic Review of Nashik 2009.

3.2.5 Land Holdings:

The land holding pattern of Nashik district can be observed from Table 3.5. The land holding pattern has similarities with the state average. In Nashik district as well as in Maharashtra state, the average size of holding is 1.6 hectares and 73 percent of farmers are

small and marginal. In Nashik district about 40 percent of land is owned by marginal and small farmers while in case of Maharashtra it is 47 percent. The average size of holding of a marginal farmer is 0.53 hectares in Nashik district. In Satana district, which is the sample district selected, as much as 78 percent of farmers are small and marginal occupying 50 percent of area. The average size of holding in this taluka is 1.48 hectares which is below district and state average.

Table 3.5: Tahsilwise Number and Area of Operational Holdings in Nashik (2000-01)

Sr. No	Tahsil	Marginal (<1 ha)		Small (1-2 ha)		Other (>2ha)		Total		Av. Size of holdings (ha)
		No. of holdings	Area in ha	No. of holdings	Area in ha	No. of holdings	Area in ha	No. of holdings	Area in ha	
1	Malegaon	27794	17320	22407	34790	16549	56008	66750	108119	1.62
2	Baglan/Satana	23430	13043	20923	29667	12889	41856	57242	84567	1.48
3	Kalvan	10212	5633	8836	12336	7166	25071	26214	43040	1.64
4	Devla	12187	6298	9507	12861	6506	20678	28200	39838	1.41
5	Nandgaon	11446	6414	13678	18907	12471	48247	37595	73569	1.96
6	Surgana	8199	4507	6906	9766	5512	19834	20617	34106	1.65
7	Nashik	20936	8883	8548	12155	7132	28193	36616	49231	1.34
8	Trambakeshwar	7516	3499	4955	7410	7431	33603	19902	44512	2.24
9	Dindori	16790	8530	13903	19371	15591	63874	46284	91775	1.98
10	Igatpuri	18913	7524	7954	11023	7976	33205	34843	51752	1.49
11	Peth	3795	1854	3665	5403	4943	19911	12403	27168	2.19
12	Niphad	31151	16637	19099	27665	12344	42027	62594	86329	1.38
13	Sinnar	25803	12967	18452	26096	15949	58685	60204	97748	1.62
14	Yeola	11738	7906	15568	24137	12818	46946	40124	78990	1.97
15	Chandwad	16709	9233	13206	19090	12260	48224	42175	76547	1.81
	Nashik District	246619	130249	187607	270678	157537	586363	591763	987289	1.67
	Maharashtra	5305743	2648659	3605606	5127056	3226278	12327089	12137627	20102804	1.66

Source: GOM (2001), Report on Agricultural Census 2000-01, Maharashtra State.

3.2.6 Irrigation:

In Table 3.6, the talukawise, sourcewise irrigated area is indicated. It can be observed that the percentage of net irrigated area (NIA) in Nashik district (24.32 percent) is higher than in Maharashtra state (17.11 percent). In Sathana taluka however, the NIA is below district average and is 21 percent.

Table 3.6: Talukawise Sourcewise Area Irrigated in Nashik district (2004-05)

(Area in ha)

Sr. No.	Taluka	Irrigated Area by source		Net Area Irrigated (NIA)	% area under groundwater (net)	Net Cropped Area (NCA)	% NIA to NCA	Net Dry land (%)
		Surface	Well					
1	Surgana	1058	2987	4045	73.84	34993	11.56	88.44
2	Kalvan	4306	6262	10568	59.25	36333	29.09	70.91
3	Devla	663	6412	7075	90.63	33616	21.05	78.95
4	Baglan/Satana	2913	13241	16154	81.97	76152	21.21	78.79
5	Malegaon	3367	14248	17615	80.89	104976	16.78	83.22
6	Nandgaon	1340	7834	9174	85.39	61000	15.04	84.96
7	Chanwad	2750	12471	15221	81.93	63704	23.89	76.11
8	Dindori	5696	15321	21017	72.90	79088	26.57	73.43
9	Peth	1019	2846	3865	73.64	20073	19.25	80.75
10	Tryambak	683	1247	1930	64.61	37855	5.10	94.90
11	Nashik	3066	16238	19304	84.12	37441	51.56	48.44
12	Eagatpuri	2658	5246	7904	66.37	49388	16.00	84.00
13	Sinner	5463	10473	15936	65.72	74679	21.34	78.66
14	Niphad	8985	24129	33114	72.87	69047	47.96	52.04
15	Yewla	7347	16472	23819	69.15	71766	33.19	66.81
Total District		51314	155427	206741	75.18	850111	24.32	75.68
Maharashtra		1001000	1942000	2993000	64.88	17490000	17.11	82.89

Source: GOM (2009), District Socio-Economic Review of Nashik 2009.

3.2.7 Cropping Pattern:

In Table 3.7, the talukawise cropping pattern is indicated. It can be observed that the cropping pattern is dominated by foodgrains, mainly cereals. Besides cereals, horticulture is also gaining importance in the district. About 6 percent of gross cropped area is under fruits and 5 percent is under onions.

Table 3.7: Talukawise Cropping Pattern of Nashik district

(Percentage to total GCA)

Sr. No.	Taluka	Rice	Maize	Total Cereals	Total Pulses	Total Food-grains	Sugar-cane	Grapes	Pomo-granate	Total Fruits	Onion
1	Surgana	17.58	0.13	73.73	5.96	79.69	0.15	0.03	0.00	0.15	0.00
2	Kalvan	8.40	25.63	63.19	9.82	73.01	4.56	0.41	0.32	0.94	5.97
3	Devla	0.01	17.11	71.91	5.55	77.46	1.34	0.16	7.81	8.02	7.24
4	Baglan/ Satana	2.06	13.89	74.39	7.75	82.14	2.35	0.70	3.39	5.39	4.17
5	Malegaon	0.02	6.23	71.87	5.19	77.06	0.43	0.08	5.12	10.90	2.81
6	Nandgaon	0.08	0.09	40.80	3.76	44.56	2.76	0.02	0.07	0.35	2.04
7	Chanwad	0.43	2.24	66.68	6.88	73.56	0.41	3.04	0.17	6.65	11.60
8	Dindori	0.55	0.26	15.57	6.48	22.04	6.11	3.03	0.07	3.15	0.72
9	Peth	31.38	0.00	78.81	13.87	92.68	0.32	0.00	0.00	0.00	0.00
10	Tryambak	28.23	0.00	76.42	13.00	89.42	0.00	0.00	0.00	0.00	0.00
11	Nashik	6.82	0.00	20.74	4.17	24.91	1.92	1.27	0.50	11.07	1.91
12	Eagatpuri	36.15	0.00	48.74	4.29	53.03	0.42	0.00	0.00	0.00	0.78
13	Sinner	4.57	0.00	65.42	7.81	73.23	2.45	0.57	0.00	9.95	4.68
14	Niphad	0.17	1.36	34.54	5.10	39.64	5.52	16.18	0.32	17.22	17.56
15	Yewla	0.00	2.89	64.88	4.67	69.55	0.43	0.22	0.14	0.63	6.81
Total District		6.11	4.39	56.26	6.44	62.69	2.18	2.09	1.32	5.94	4.93

Source: GOM (2009), District Socio-Economic Review of Nashik 2009.

3.2.8 Infrastructure:

The infrastructure in Nashik district can be observed from Table 3.8 to 3.10. It can be observed that out of total of 1931 villages, only 10 are not electrified. All 18 towns are electrified. From Table 3.9, it can be observed that about 26 percent of electric consumption is for agriculture. The road length by type of road is indicated in Table 3.10. Village roads are the main roads in the district.

Table 3.8: Number of Towns and Villages Electrified in Nashik district

Sr. No	Agency	Total (No.)		Electrified Villages		Electrified Towns		Electrified Towns and Villages	
		Villages	Towns	No.	Popl. (in lakh)	No.	Pop. (in lakh)	No.	Pop. (in lakh)
1	Maharashtra State Electricity Board	1931	18	1921	30.56	18	19.38	1939	49.94
2	Private	0	0	0	0	0	0	0	0
	Nashik District	1931	18	1921	30.56	18	19.38	13939	49.94

Source: GOM (2009), District Socio-Economic Review of Nashik, 2009.

Table 3.9: Sectorwise Use of Electricity in Nashik District (2008-09)

Sr. No.	Particular	Nashik district					Maharashtra	
		Electricity Use as per source (KWH)				% to total	Total Use	% to total
		Thermal	Hydro	Other	Total			
1	Domestic	611254	0	0	611254	63.61	16878	23.12
2	Commercial	74606	0	0	74606	7.76	9102	12.47
3	Industrial	19508	0	0	19508	2.03	28850	39.52
4	Public Lighting	1593	0	0	1593	0.17	781	1.07
5	Agriculture	248691	0	0	248691	25.88	12733	17.44
6	Other	5332	0	0	5332	0.55	4650	6.37
7	Total	960984	0	0	960984	100.00	72994	100.00

Source: GOM (2009), District Socio-Economic Review of Nashik 2009.

Table 3.10: Road Length by Type of Road in Nashik district

Sr. No.	Road	Nashik district		Maharashtra	
		Length (Kms)	% to total	Length (Kms)	% to total
1	National Highway	182.24	0.91	4367	1.84
2	State Highway	1568.72	7.86	33933	14.28
3	Major District Roads	2227.52	11.16	49621	20.88
4	Other District Roads	3458.17	17.32	46143	19.41
5	Village Roads	12525	62.75	103604	43.59
	All Roads	19961.65	100.00	237668	100.00

Source: GOM (2009), District Socio-Economic Review of Nashik 2009.

3.2.9 District Income:

The sector wise total and per capita district income is indicated in Table 3.11 at constant prices while in Table 3.12 it is indicated in current prices. It can be observed that in 2006-07, the agricultural sector contributed to 24 percent of district income (constant prices). It was however noted earlier that 62 percent of workforce in Nashik district is engaged in agricultural sector which reveals low productivity in this sector. The per capita income at constant prices of the district is however higher than state average by 6 percent.

3.2.10 Poverty:

It can be observed from Table 3.13 (which indicates number of rural families below poverty line) that 40.58 percent of rural families are below poverty line. In some talukas of the district, this percentage is much higher. Further, poverty was

concentrated in ST families and 58.20 percent of ST rural families were under poverty line.

Table 3.11: Sector-wise Total and Per capita District Income (at Constant Prices): Nashik

(Amount in Lakhs)

Sl. No.	Area	Year 2006-07		Year 2006-07	
		Gross District Income	Net District Income	Gross District Income	Net District Income
1.1	Agriculture	476835	449725	487109	459610
1.2	Forestry	6542	6158	6704	6287
1.3	Fishery	1025	781	1282	952
1.4	Mining and Quarrying	279	226	512	409
Primary Sector		484681 (23.04)	456890 (25.05)	495607 (22.02)	467258 (24.01)
2.1	Registered Manufacturing	415390	311400	447061	333368
2.2	Unregistered Manufacturing	87646	70558	95718	76875
2.3	Construction	75736	72272	79135	75324
2.4	Electricity , Gas and Water supply	34936	21096	40002	24294
Secondary Sector		613708 (29.17)	475326 (26.06)	661916 (29.41)	509861 (26.19)
3.1	Railway	17448	15499	18676	17017
3.2	Transportation by other means and Storage	58996	25839	63599	26693
3.3	Communication	54082	47398	61587	54298
3.4	Trade Hotels and Restaurants	383626	361581	418650	394462
3.5	Banking and Insurance	185601	181174	204485	199906
3.6	Real estate, ownership of dwellings	121177	105411	130216	113539
3.7	Public Administration	85523	68323	94023	75104
3.8	Other Services	98905	86630	101813	88312
Territory Sector		1005358 (47.79)	891855 (48.89)	1093049 (48.57)	969331 (49.80)
Total District Income		2103747	1824071	2250572	1946450
Per Capita District Income (Rs.)		38719	33572	40834	35316
Total State Income		38124679	32759910	41624762	35740165
Per capita State Income (Rs.)		36055	30982	38785	33302

Note: Figures are bracket are percentage of sector to district total.

Source: GOM (2009), District Socio-Economic Review of Nashik, March 2009.

Table 3.12: Sector-wise Total and Per capita District Income (at Current Prices): Nashik

(Amount in Lakh)

Sl. No.	Area	Year 2006-07		Year 2006-07	
		Gross District Income	Net District Income	Gross District Income	Net District Income
1.1	Agriculture	631814	594398	628660	593882
1.2	Forestry	13222	12764	13655	13031
1.3	Fishery	1653	1323	2422	1906
1.4	Mining and Quarrying	392	307	767	609
<i>Primary Sector</i>		647081 (22.38)	608792 (24.37)	645504 (20.12)	609428 (22.08)
2.1	Registered Manufacturing	636987	489099	712527	541215
2.2	Unregistered Manufacturing	116981	92096	133333	104176
2.3	Construction	125465	120820	143213	137785
2.4	Electricity, Gas and Water supply	30687	11861	37581	14826
<i>Secondary Sector</i>		910120 (31.48)	713876 (28.58)	1026654 (32.00)	798002 (28.91)
3.1	Railway	20371	17241	22318	19216
3.2	Transportation by other means and Storage	84766	40511	100010	47300
3.3	Communication	45672	36597	54076	43643
3.4	Trade Hotels and Restaurants	537696	506656	619579	583384
3.5	Banking and Insurance	206931	200862	232367	225589
3.6	Real estate, ownership of dwellings	183072	159044	206725	179910
3.7	Public Administration	117970	94372	149518	121938
3.8	Other Services	137063	119771	151753	131545
<i>Territory Sector</i>		1333541 (46.13)	1175054 (47.05)	1536346 (47.88)	1352525 (49.01)
Total District Income		2890742	2497722	3208504	2759955
Per Capita District Income (Rs.)		53203	45970	58215	50077
Total State Income		50883614	43505500	59099523	50495069
Per capita State Income (Rs.)		48121	41144	55068	47051
% share of district income in total state income		5.68	5.74	5.43	5.47

Note: Figures in bracket are percentage of sector to district total.

Source: GOM (2009), District Socio-Economic Review of Nashik, March 2009.

3.2.11 Profile of Satana /Baglan Taluka:

As mentioned earlier, in order to study agricultural marketing in TC and EC, the crops selected were pomegranate and onion and relevant data was collected for Satana taluka. This taluka was formerly known as Baglan taluka. In Table 3.14, a profile of Satana taluka is indicated. It can be observed from Table 3.14 that the taluka has 180 villages and 129 gram panchayats. The literacy rate of the taluka is 58 percent and 89 percent of the population is rural.

Table 3.13: Number of Rural Families under Poverty line: Nashik

Sr. No	Taluka	Total No. of Rural families	No. of Rural families under Poverty line	% of Rural families under Poverty line	% of Rural families under Poverty line to total families		
					SC	ST	Others
1	Surgana	32695	26881	82.22	0.33	98.74	0.93
2	Kalvan	28633	12058	42.11	5.30	87.48	7.22
3	Devla	23516	6594	28.04	19.12	34.23	46.65
4	Baglan/Satana	58173	25721	44.21	12.45	56.30	31.25
5	Malegaon	78816	27206	34.52	16.75	32.46	50.79
6	Nandgaon	35636	14118	39.62	10.17	36.89	52.94
7	Chanwad	40150	8206	20.44	15.99	50.00	34.01
8	Dindori	46631	23511	50.42	8.37	75.58	16.05
9	Peth	20278	13833	68.22	0.64	99.07	0.29
10	Tryambak	24119	15847	65.7	12.00	80.00	8.01
11	Nashik	26843	10918	40.67	11.65	61.43	26.92
12	Eagatpuri	34147	14038	41.11	20.00	50.00	30.00
13	Sinner	46259	12333	26.66	13.09	28.52	58.40
14	Niphad	78120	24518	31.39	19.61	37.34	43.05
15	Yewla	41595	14063	33.81	17.27	20.59	62.14
Total		615611	249845	40.58	11.76	58.20	30.04

Notes: SC-Scheduled Castes, ST-Scheduled Tribes

Source: GOM (2009) District Socio-Economic Review of Nashik, March 2009.

Table 3.14: Profile of Selected Taluka - Baglan (Satana)

Particulars	Units
Area (Sq. Kms.)	1477.83
No. of Villages	180
No. of Gram-panchayat	129
No. of Towns	1
No. of Families (000)	57
Total Population (000)	311
Rural (000)	278
Urban (000)	32
Females (000)	151
Males (000)	160
Literacy %	58
No. of PACS	1060
Geographical Area (00 Ha)	1616
Total Cropped Area (00 Ha)	760
No. of Wells (00)	179
Wells with Electric Motors (00)	118
Wells with Oil Engines (00)	17
No. of BPL Families as per 1998 Survey	244
Average Rain Fall	425
No. of Veterinary Centers	39
No. of A.I. Centers	1
No. of Poultry Birds (000)	65
No. of Goats (000)	66
No. of Buffaloes (000)	23
No. of Local Cows (000)	28
No. of C.B. Cows (Actual)	204
No. of Bullocks (000)	45

Source: <http://nashik.gov.in/htmldocs/adminhis.htm>

3.3 Socio-Economic Characteristics of Sample Farmers:

3.3.1 Socio-Economic Characteristics of Sample Farmers:

The number of farmers selected for collection of primary data is indicated in Table 3.15. It can be observed from Table 3.15 that in case of TMC, for both crops the number of sample farmers was 35. However, with respect to EMC, it was not possible to get a sample of 35 farmers. While we could obtain a sample of 13 farmers from whom DFPCL purchased onions, in case of pomegranate, in the reference year (2009), only 5 farmers had sold pomegranates to DFPCL. This is because DFPCL purchases the produce from several markets and its purchases are very limited depending upon the orders it receives from retail outlets, which are malls or exporters.

Table 3.15: Selected Sample Households-Satana Taluka of Nashik District

Sr. No	Crop	No. of Farmers		
		Emerging Marketing Channel (EMC)	Traditional Marketing Channel (TMC)	Total
1	Onion	12	35	47
2	Pomegranate	05	35	40
	Total	17	70	87

The socio- economic characteristics of sample farmers are indicated in Table 3.16. It can be seen from the table that in case of onion, about 94 percent of households owned a ration card and 80.65 percent of households were APL families while in case of pomegranate 89.47 percent had APL cards. All other characteristics regarding age of head of household, education and assets owned can be observed from Table 3.16 and 3.17.

Table: 3.16: Socio –Economic Characteristics of Sample farmers -Onion

Particulars	Onion	
	TMC	EMC
A. Religion and Caste of Farm Household		
% of Hindu Household	100.00	100.00
% of Muslim Household	0.00	0.00
% SC household	2.86	0.00
% ST household	0.00	0.00
% OBC household	45.71	33.33
% Other households	51.43	66.67
B. Household Characteristics		
% Of household owning a ration card	94.29	91.67
% Of APL household	74.29	100.00
%Of BPL household	25.71	0.00
% Of pucca house	71.43	100.00
% of kuccha & semi-kuccha house	28.57	0.00
% Household Owning telephone landline	14.29	25.00
% Of household owning at least one mobile phone	91.43	91.67
% Of household owning at computer	8.57	0.00
% Of household owning internet	2.86	0.00
% Of household owning internet as well as computer	2.86	0.00
C. Head of The Household		
Avg. Age of head (years)	47.63	49.83
% Female head of household	2.86	0.00
Years of avg. Education of the head	9.26	9.67
D. Education of the household member (% to total)		
Av. Education of the household members (years)	8.64	7.90
% Household member with primary education	17.14	14.29
% Household member with matriculate education	30.86	26.98
% Household member -graduation education	33.71	33.33
% household member who have completed post-graduation	5.14	4.76
E. Transport, farm, and storage assets		
% of owning Bullock Cart	65.71	58.33
% of owning Tractor	37.14	75.00
% of owning Trolley	34.29	66.67
% of owning Harvest	14.29	16.67
% of owning Bicycle	48.57	50.00
% of owning Motorcycle	65.71	100.00
% of owning Four-wheeler	22.86	33.33
% of owning Tiller	37.14	75.00
% of owning Pumpset	100.00	100.00
.F. Landholding		
Maximum size of the farm (ha)	18.00	13.60
Minimum size of the farm (ha)	0.40	1.75
Median size (ha)	3.32	5.85
% Own land	100.00	100.00
%Leased land	2.86	0.00
% Dry land farmer	0.00	0.00
% Of irrigated farmer (groundwater)	100	100
% Of irrigated farmer (surface)	0	0

Source: Field Survey Data.

Table 3.17: Socio –Economic Characteristics of Sample farmers –Pomegranate

Particulars	Pomogranate	
	TMC	EMC
A. Religion and Caste of Farm Household		
% of Hindu Household	100.00	100.00
% of Muslim Household	0.00	0.00
% SC household	8.57	0.00
% ST household	0.00	0.00
% OBC household	48.57	33.33
% Other households	42.86	66.67
B. Household Characteristics		
% Of household owning a ration card	91.43	66.67
% Of APL household	88.57	100.00
%Of BPL household	11.43	0.00
% Of pucca house	68.57	100.00
% of kuccha & semi-kuccha house	31.43	0.00
% Household Owning telephone landline	20.00	33.33
% Of household owning at least one mobile phone	97.14	100.00
% Of household owning at computer	5.71	0.00
% Of household owning internet	2.86	0.00
% Of household owning internet as well as computer	0.00	0.00
C. Head of The Household		
Avg. Age of head (years)	47.29	37.33
% Female head of household	0.00	0.00
Years of avg. Education of the head	10.57	11.33
D. Education of the household member (% to total)		
Av. Education of the household members (years)	7.65	7.61
% Household member with primary education	19.79	30.77
% Household member with matriculate education	31.55	38.46
% Household member -graduation education	27.27	23.08
% household member who have completed post-graduation education	3.74	0.00
E. Transport, farm, and storage assets		
% of owning Bullock Cart	82.86	33.33
% of owning Tractor	40.00	33.33
% of owning Trolley	40.00	33.33
% of owning Harvest	2.86	0.00
% of owning Bicycle	57.14	100.00
% of owning Motorcycle	88.57	100.00
% of owning Four-wheeler	14.29	66.67
% of owning Tiller	40.00	33.37
% of owning Pumpset	100.00	100.00
F. Landholding		
Maximum size of the farm (ha)	10.00	6.00
Minimum size of the farm (ha)	0.80	0.60
Median size (ha)	2.79	2.25
% Own land	100.00	100.00
%Leased land	14.29	0.00
% Dry land farmer	0.00	0.00
% Of irrigated (groundwater)	100	100
% Of irrigated farmer (surface)	0	0

Source: Field Survey Data.

3.3.2 Storage and Processing Devices used by Sample Farmers:

Investment made on devices used for storage and processing of produce is indicated in Table 3.18. With respect to onion farmers in TMC, it can be observed that 54.3 percent of them had invested in onion storage (*Kanda chawl*) while in case of EMC, it was 66.7 percent. With respect to pomegranate farmers, it was observed that they too cultivate onions and hence invested in onion storage (*Kanda chawl*) (see, Box 3.1). Infact, the onion storage (*Kanda chawl*) with respect to EMC for pomegranate farmers, seems to be large and of better quality as the investment made is relatively higher. None of the farmers had made any investment in processing devices.

Table 3.18: Devices Used for Storage and Processing of Produce

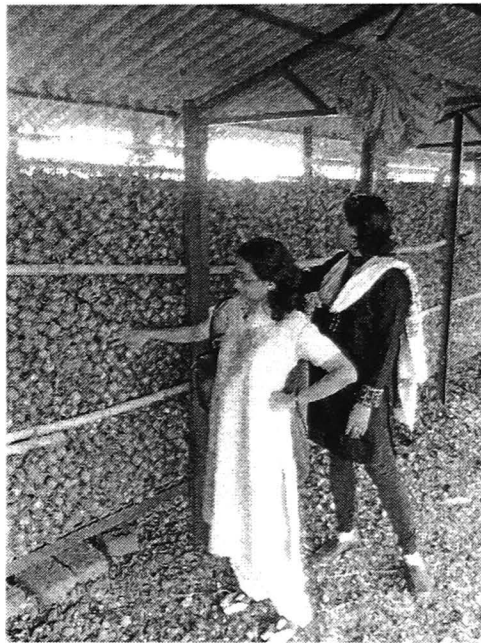
Sr. No.	Devices	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
A	Storage Devices						
<i>a</i>	<i>Open Land</i>						
1	% of farmers to total	31.4	25.0	29.8	28.6	0.0	26.3
2	Investment Cost/farmer (Rs)	7391	52778	7077	8722	0	8722
3	Recurring Cost/farmer (Rs)	473	0	371	780	0	780
4	Present Value/farmer (Rs)	11791	96667	11907	13425	0	13425
<i>b</i>	<i>Onion Chawl</i>						
1	% of farmers to total	54.3	66.7	57.4	28.6	33.3	28.9
2	Investment Cost/farmer (Rs)	2042	12497	2108	11600	200000	11240
3	Recurring Cost/farmer (Rs)	163	550	127	1000	0	909
4	Present Value/farmer (Rs)	4061	19297	3738	14250	450000	15496
B	Processing Devices						
1	% of farmers to total	0	0	0	0	0	0
2	Investment Cost/farmer	0	0	0	0	0	0
3	Recurring Cost/farmer	0	0	0	0	0	0
4	Present Value/farmer	0	0	0	0	0	0

Source: Field Survey Data.

3.3.3 Land Holding Pattern of Sample Farmers:

The landholding pattern of selected households and irrigated area is indicated in Table 3.19. In case of onion households, the average operated land was 3.32 hectares while in case of EMC, it was 5.85 hectares. Thus EMC farmers had higher farm size operated as compared to TC. However, in case of pomegranate, the average operated area was slightly higher in TC as compared to EMC. It was observed that irrigation facilities were good and more than 90 percent of area operated was irrigated across all households.

Box 3.1: Onion Storage Structure (*Kanda Chawl*)



Generally onion produced in kharif and late kharif season is not suitable for storage while onion produced in summer season can be stored upto 5-6 months and it can be brought in the market during rainy season i.e. from June to October. There are certain problem which arises during conventional storage of onion viz. loss in weight, sprouting and rotting of bulb. To overcome these losses onion must be stored in scientific manner and its prices. MSAMB with the help of NABARD and National Research Centre for Onion and Garlic, Rajgurunagar has developed revised plan for scientific onion storage (*Kanda chawl*) to promote onion producers for scientific onion storage. The onion storage as per this plan will minimize the storage losses and quality deterioration of the onion which will in turn help the farmers to fetch better prices for their produce. The construction cost of the onion storage structure is assumed at Rs. 6000/- per MT for this scheme (also see, *Annexure I*).

Source: MSEMB (<http://www.msamb.com/english/schemes/onionstorage.htm>).

Table 3.19: Land Holdings and Irrigated Area of Selected Households (*Area in ha*)

Sr. No	Land Details	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
A	Total Owned Land						
1	Dry land	0.27	0.80	0.41	0.18	0.00	0.16
2	Surface Irrigated	0.11	0.17	0.13	0.07	0.00	0.06
3	Well Irrigated	2.92	4.88	3.42	2.44	2.53	2.45
4	Total Irrigated	3.03	5.05	3.55	2.51	2.53	2.51
5	Total land	3.31	5.85	3.96	2.69	2.53	2.68
B	Leased-in land						
1	Dry land	0.00	0.00	0.00	0.05	0.00	0.05
2	Surface Irrigated	0.00	0.00	0.00	0.00	0.00	0.00
3	Well Irrigated	0.01	0.00	0.01	0.05	0.00	0.04
4	Total Irrigated	0.01	0.00	0.01	0.05	0.00	0.04
5	Total land	0.01	0.00	0.01	0.10	0.00	0.09
C	Leased Out land						
1	Dry land	0.00	0.00	0.00	0.00	0.00	0.00
2	Surface Irrigated	0.00	0.00	0.00	0.00	0.00	0.00
3	Well Irrigated	0.00	0.00	0.00	0.00	0.00	0.00
4	Total Irrigated	0.00	0.00	0.00	0.00	0.00	0.00
5	Total land	0.00	0.00	0.00	0.00	0.00	0.00
D	Net Operated Land						
1	Dry land	0.27	0.80	0.41	0.23	0.00	0.21
2	Surface Irrigated	0.11	0.17	0.13	0.07	0.00	0.06
3	Well Irrigated	2.93	4.88	3.43	2.49	2.53	2.50
4	Total Irrigated	3.04	5.05	3.55	2.56	2.53	2.56
5	Total land	3.32	5.85	3.96	2.79	2.53	2.77
E	Av. Land holdings						
1	Own Land	3.31	5.85	3.96	2.69	2.53	2.68
2	By Net Operated Land	3.32	5.85	3.96	2.79	2.53	2.77
3	% NIA to NCA	91.73	86.32	89.69	91.81	100.00	92.40

Source: Field Survey Data.

3.3.4 Cropping Pattern of Sample Farmers:

The cropping pattern of selected households is indicated in Table 3.20. The net operated area for the onion farmers under TMC was 3.3 hectares and 1 hectare or 21.7 percent of net operated area was used for onion cultivation while in case of EMC it was 25 percent of net cropped area. In case of pomegranate farmers, 31.4 percent of area was under pomegranate for TMC and 23 percent for EMC.

Table 3.20: Cropping Pattern of the Selected Households: (Area in ha)

Sr. No.	Season/Crops	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
<i>A</i>	<i>Kharif</i>						
1	Bajara	0.4	0.5	0.4	0.4	0.1	0.4
2	Maize	1.0	2.4	1.4	0.8	1.2	0.9
3	Flower	0.0	0.0	0.0	0.0	0.0	0.0
4	Moog	0.0	0.1	0.0	0.0	0.0	0.0
5	Onion	0.1	0.2	0.1	0.1	0.2	0.1
6	Tomato	0.1	0.1	0.1	0.0	0.0	0.0
7	Chilli	0.0	0.0	0.0	0.0	0.0	0.0
8	Groundnut	0.0	0.0	0.0	0.0	0.0	0.0
9	Soyabean	0.0	0.0	0.0	0.0	0.0	0.0
10	Tag	0.1	0.0	0.1	0.0	0.0	0.0
11	Tur	0.0	0.0	0.0	0.0	0.0	0.0
12	Vegetables	0.0	0.0	0.0	0.0	0.0	0.0
<i>B</i>	<i>Rabi</i>						
1	Bajara	0.0	0.0	0.0	0.1	0.0	0.1
2	Gram	0.0	0.2	0.1	0.0	0.0	0.0
3	Onion	1.0	2.0	1.3	0.3	1.3	0.4
4	Tomato	0.0	0.0	0.0	0.0	0.0	0.0
5	Wheat	0.3	0.4	0.3	0.4	0.2	0.3
<i>C</i>	<i>Summer</i>						
1	Bajara	0.0	0.0	0.0	0.0	0.0	0.0
2	Grapes	0.4	0.1	0.3	0.0	0.0	0.0
3	Onion	0.0	0.0	0.0	0.1	0.0	0.1
4	Pomegranate	0.6	1.5	0.9	1.1	0.9	1.1
5	Sugarcane	0.4	0.6	0.5	0.1	0.0	0.1
6	Other	0.0	0.0	0.0	0.0	0.0	0.0
	<i>CP</i>						
1	Bajara	0.4	0.5	0.4	0.5	0.1	0.4
2	Maize	1.0	2.4	1.4	0.8	1.2	0.9
3	Wheat	0.3	0.0	0.2	0.4	0.2	0.3
4	Moog	0.0	0.1	0.0	0.1	0.0	0.1
5	Tur	0.0	0.0	0.0	0.0	0.0	0.0
6	Gram	0.0	0.2	0.1	0.0	0.0	0.0
7	Groundnuts	0.0	0.0	0.0	0.0	0.0	0.0
8	Soyabean	0.0	0.0	0.0	0.0	0.0	0.0
9	Fiber crop (tag)	0.1	0.0	0.1	0.0	0.0	0.0
10	Sugarcane	0.4	0.6	0.5	0.1	0.0	0.1
11	Onion	1.1	2.5	1.5	0.4	1.5	0.5
12	Other Vegetables	0.1	0.1	0.1	0.1	0.0	0.0
13	Chilli	0.0	0.0	0.0	0.0	0.0	0.0
14	Flower	0.0	0.0	0.0	0.0	0.0	0.0
15	Grapes	0.4	0.1	0.3	0.0	0.0	0.0
16	Pomegranate	0.6	1.5	0.9	1.1	0.9	1.1
17	others	0.0	0.0	0.0	0.0	0.0	0.0
	Cropping Intensity	139.8	135.6	138.2	127.2	152.6	129.0

Source: Field Survey Data.

3.4 Status of Selected crops (Onion and Pomegranate in Maharashtra):

As noted earlier, in order to compare marketing between TMC and EMC, two horticultural crops namely onion and pomegranate were selected as both crops are important in Maharashtra. In this section, the status of these two horticultural crops in Maharashtra is indicated.

3.4.1 Status of Onion in Maharashtra:

Maharashtra is a leading producer of onion crop and it was noted in Table 3.1 that the state ranks first in the country, both in terms of area and production. Onion is essentially a cool season crop and grows best under mild climate without extreme heat, cold or excessive rainfall. It grows in all types of soil. In Maharashtra, onion is cultivated in three seasons, namely kharif, late kharif and rabi. The storage quality for kharif and late kharif is poor due to high soil moisture and these bulbs normally sprout within five to six days of harvest. Further, curing and drying becomes difficult due to post monsoon rains. The produce of these seasons can therefore be stored for one month. However, in the case of rabi crop, dry days and low moisture in the soil induces dormancy in the bulbs. Curing is also done effectively and hence the produce can be stored for 4 to 6 months.

Onion crop is also an important commercial vegetable crop grown in India. This crop also plays an important component in the consumption of the Indian consumer. It is used as salad or used for cooking purposes and also used in processed form e.g. flakes, powder, paste, etc. The main value of this crop is in its flavor and is low in protein and vitamins. Onion is a politically sensitive crop as it forms a major component of the poor person's diet and was brought under Essential Commodities Act, 1955 after prices of this commodity sky rocketed in 1998-99. The Essential Commodities Act, 1955 was enacted to ensure the easy availability of essential commodities to consumers. However, in 2004-05, onion was taken out of Essential Commodity List by the Ministry of Consumer Affairs, Government of India.

3.4.1.1 District-wise Area and Production of Onions:

In Maharashtra onion is cultivated in three seasons, namely kharif, late kharif and rabi. The area under onions in Maharashtra was 2.29 lakh hectares (2006-07) while production was 28.12 lakh tonnes. The yield of onions in Maharashtra normally ranges between 11 tonnes to 12 tonnes per hectare. As mentioned earlier Maharashtra has three seasons for onion. About 6.8 percent area is under kharif, 31.3 percent under late kharif,

while 61.8 percent is under rabi. With respect to production also a similar pattern is followed with 6 percent of production under kharif season, 33.3 percent in late kharif and 61 percent in rabi season.

Though Maharashtra is a leading producer of onions in the country, its production is concentrated only in a few districts. The district wise percentage area under onion is indicated in Table 3.21. It can be observed from table that almost three fourths of the area under onion was cultivated in five districts, namely, Nashik, Ahmednagar, Pune, Solapur and Satara. Nashik had the highest area which was 37.88 percent in 2004-05 and together Nashik and Ahmednagar occupied 61.38 percent (2004-05) area under onion. Overall it can be concluded that Nashik district is the leading producer of onion in Maharashtra.

Table 3.21: Major Onion Growing districts in Maharashtra

Year	(% to state total)						Maharashtra
	Nashik	Ahmednagar	Pune	Solapur	Satara	Others	
1995-96	19.81	12.66	27.81	5.30	7.90	26.52	100.00
1996-97	32.27	10.19	22.28	5.59	7.39	22.28	100.00
1997-98	25.85	9.51	29.16	5.07	10.24	20.17	100.00
1998-99	39.17	9.05	21.37	7.41	5.77	17.23	100.00
1999-00	39.34	8.79	21.94	7.37	5.33	17.23	100.00
2000-01	32.94	16.26	18.97	6.69	5.42	19.72	100.00
2001-02	15.88	16.53	23.68	6.04	10.03	27.84	100.00
2002-03	26.68	14.42	17.40	4.97	9.61	26.92	100.00
2003-04	45.36	22.46	16.84	0.90	1.80	12.64	100.00
2004-05	37.88	23.50	16.05	2.55	4.81	15.21	100.00

Source: GOM (2006), Agricultural Statistical Information, Maharashtra State, (Part II).

The major onion producing districts in Maharashtra are indicated in Table 3.22. It can be observed that as in case of area, Nashik is also the leading district for production.

Table 3.22: Major Onion Producing Districts in Maharashtra

Year	(% to total state production)						Maharashtra
	Nashik	Ahmednagar	Pune	Solapur	Satara	Others	
1995-96	18.91	13.73	33.06	4.66	8.75	20.89	100.00
1996-97	32.64	10.07	24.89	4.63	8.87	18.90	100.00
1997-98	21.90	7.52	34.86	4.27	12.63	18.82	100.00
1998-99	42.70	8.22	22.51	5.55	5.72	15.30	100.00
1999-00	41.10	7.82	24.42	5.26	5.33	16.07	100.00
2000-01	30.80	15.96	21.72	5.68	4.01	21.82	100.00
2001-02	13.78	19.79	22.28	3.86	13.92	26.38	100.00
2002-03	21.06	16.23	16.09	3.57	13.12	29.94	100.00
2003-04	48.23	18.03	19.76	0.39	1.30	12.28	100.00
2004-05	38.36	25.63	16.73	2.42	5.05	11.82	100.00

Source: GOM (2006), Agricultural Statistical Information, Maharashtra State, (Part II).

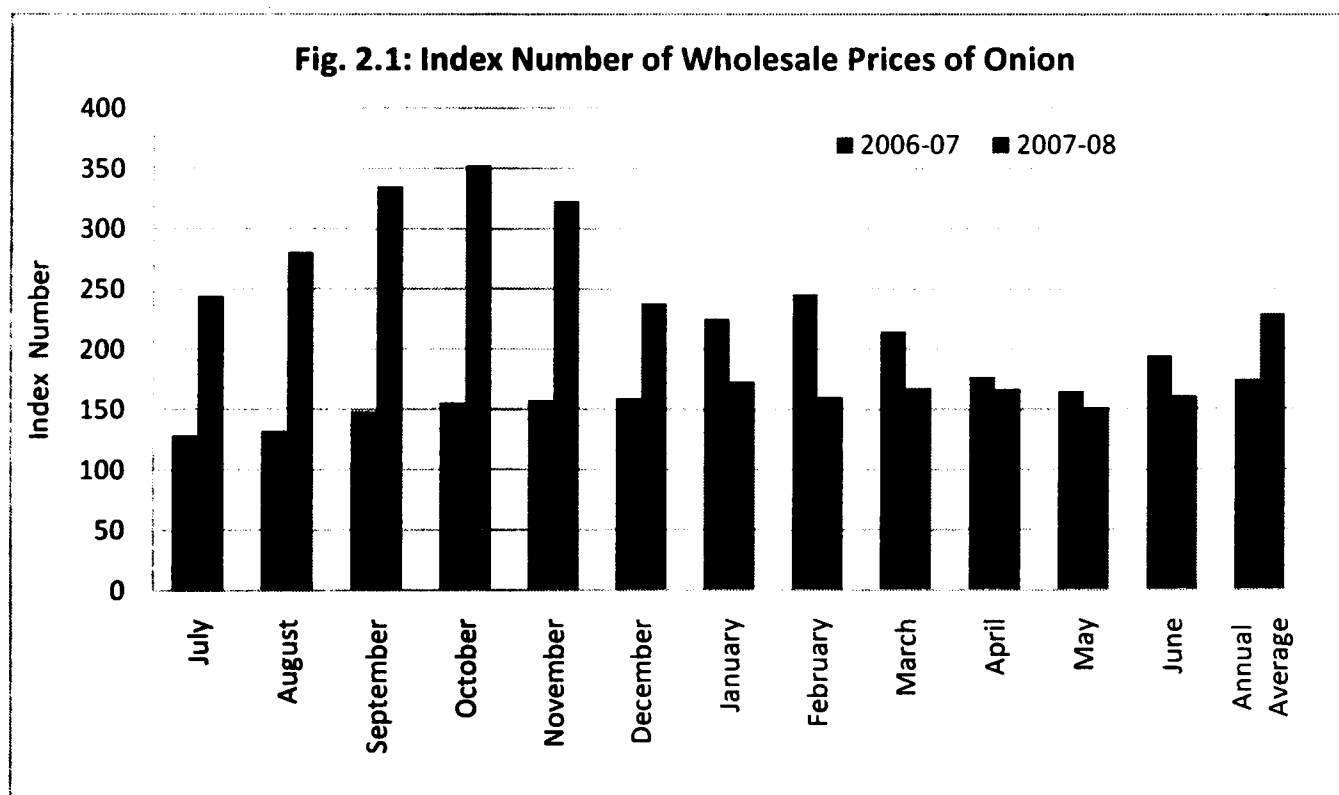
Onion Prices:

Onion being a highly perishable commodity is subject to seasonal fluctuations. The index number of wholesale prices of onions can be observed from Table 3.23 and Fig 2.1

Table 3.23: Index Number of Wholesale Prices of Onion (Monthly Average: Base 1993-94)

Month	2006-07	2007-08
July	128.1	244.1
August	132.1	280.6
September	147.9	335.2
October	155.4	352.6
November	157.5	322.8
December	159.1	238.1
January	225.5	173.3
February	245.8	160.4
March	214.4	167.5
April	176.9	166.9
May	165.3	151.7
June	194.6	161.4
Annual Average	175.2	229.5
Standard Deviation	37.2	76.5

Source: GOI (2008), *Agricultural Situation in India*, August.



It can be observed from Table 3.23 that there are huge intra as well as inter seasonal variations in price of onions. Intra seasonal fluctuations in prices are observed more in 2007-08 than in 2006-07. In 2007-08, it can be observed that prices are lowest in May when the rabi crop arrives in the market and there is a post harvest glut. Gradually the price begins to rise as farmers and traders begin to stock the produce and the price peaks in October-November. Thereafter the kharif crop arrives in the market, eases the supply leading to fall in price.

3.4.2 Status of Pomegranate in Maharashtra:

Pomegranate is a high value crop and in fact its entire tree is of great economic importance. The fruit has great nutritive value and is a rich source of Vitamin C, calcium and phosphorous. Apart from its demand as fresh fruit and juice, it is mixed in processed products like wine. All parts of pomegranate tree have great therapeutic value and are used in leather and dyeing industry.

Pomegranate as a fruit crop is gaining importance in Maharashtra. There are three flowering seasons for this fruit namely, Ambe Bahar, Mrig Bahar and Hasta Bahar. The flowering season for Ambe Bahar starts in the month of January - February, in case of Mrig Bahar it is June-August and for Hasta Bahar it is October - November. This enables the fruit to be available throughout the year. While the area under pomegranate was barely 6400 hectares in 1990-91 (Department of Horticulture, GoM), it gradually increased over the years and is presently 90500 hectares, making Maharashtra the largest producer of pomegranates in India. The district-wise area under pomegranate is indicated in Table 3.24.

Table 3.24: District-wise area (hectares) under Pomegranates (2006-07)

District	Nashik	Solapur	Ahmednagar	Others	Maharashtra
Area (ha)	35400	32908	6325	17867	92500
% of district to state	38.27	35.57	6.84	19.32	100

Source: NHB (2008) and Dept. of Horticulture, Govt. of Maharashtra, Pune

It can be observed from Table 3.23 that three fourths of the area under pomegranate in Maharashtra is concentrated in Nashik and Solapur district. The main varieties cultivated are Bhagawa and Ganesh.

3.4.2.1 District-wise Area and Production of Pomogranate:

District-wise data on production and productivity are not available for pomegranates in any published source. The state data is indicated in Table 3.24. It can be observed from Table 3.25 that there has been a gradual increase in area under pomegranates in Maharashtra over the years and area which was 73700 hectares in 2001-02 increased to 90500 hectares in 2007-08. The productivity of this fruit however has not increased over the years and was 6.61 MT per hectare in 2007-08.

Table 3.25: Area, Production and Productivity of Pomegranates in Maharashtra

Year	Area (000 hectares)	Production (000 MT)	Productivity (MT/hectare)
2000-01	73.7	431.5	5.85
2001-02	77.11	176.11	2.28
2002-03	81.37	509.48	6.26
2003-04	84.29	532.98	6.32
2004-05	88.51	568.2	6.42
2005-06	91.0	593.64	6.52
2006-07	92.50	601.5	6.43
2007-08	90.50	598.2	6.61

Source: www.indiastat.com

The price of pomegranates, weighted by their arrivals in important APMC markets in Maharashtra is indicated in Table 3.26 below:

Table 3.26: Average Domestic Price of Pomegranates (2006-08) in Major APMCs of Maharashtra

APMC	Average Domestic Price of Pomegranates (in Rs/kg)		
	2006	2007	2008
Mumbai	35.75	37.72	40.19
Pune	30.44	38.82	44.72
Nashik	28.80	33.80	39.71

Source: NHB (2006, 2007, 2008), Horticulture Database.

It can be observed that pomegranate is traded in APMCs in Maharashtra at a price ranging from Rs 39.7 to Rs 44.72 per kg.

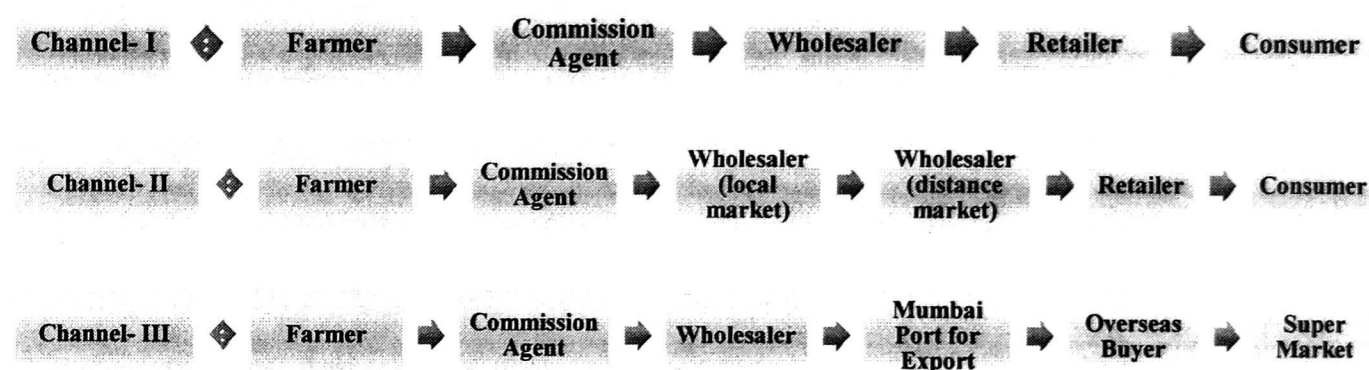
From the above two sections, the importance of onions and pomegranates in Maharashtra's horticultural sector was observed. In the following section, the supply chain of the two horticultural crops and also the profile as well as marketing operation of EC are observed.

3.5 Traditional Channel and Emerging Channel:

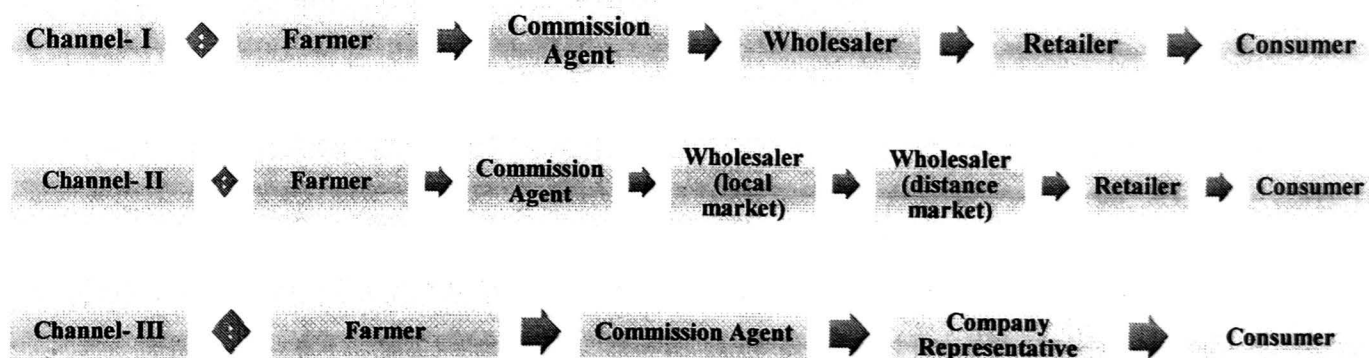
3.5.1 Traditional Marketing Channel (TMC):

With respect to onions, marketing in the traditional channel takes place through auction method in the APMC. The farmers bring their produce to the regulated markets and sell it to the wholesalers through commission agents. The produce is sold to the highest bidder. The wholesalers then transport the produce to retailers in distant markets who finally sell the produce to the consumer.

The marketing channels for onion in Satana APMC, Nashik district was thus observed as follows:



In case of pomegranate also it was observed that marketing in the TC takes place through auction method in the APMC markets. In Satana APMC, it was observed that a number of fruit processors also participate in the auctions so as to purchase pomegranate which is then processed into juice. The supply chain for TC with respect to pomegranate is:



3.5.2 Emerging Marketing Channel (EMC):

It has been noted earlier that amendments have been made in APMC Act to allow corporate entry into agricultural markets. Deepak Fertilisers and Petro Chemicals Ltd. (DFPCL) is one such corporate which has entered into agricultural markets both as a backward linkage as well as forward linkage to the agricultural sector. In our study DFPCL has been selected as a case of EMC. Before going into the supply chain of DFPCL, a brief profile of the operations of the company has been presented.

Deepak Fertilisers and Petro Chemicals Corporation Limited (DFPCL):

Deepak Fertilisers and Petro Chemicals Ltd. (DFPCL) has entered into agricultural markets with the purpose of providing cost effective technology to farmers so as to produce quality fruit. It also procures produce for domestic and international buyers as well as for processors.

DFPCL was initially established for the purpose of manufacturing fertilizers in India. However, it diversified through its Agribusiness & Farming Solutions (ABFS) Division in providing cost effective solutions to farmers, complete agronomic advisory service and plant nutrition solutions, pre and post harvest technology dissemination and all round efforts to make the Indian farmer globally competitive. The Agri Service division of DFPCL is known as Saarrthie and DFPCL has seven Saarrthie centres in key agri areas of Maharashtra state.

3.5.2.1 Agri-Service Division of DFPCL (Saarrthie)

Saarrthie centers are located in major districts of Maharashtra namely Nashik, Aurangabad, Pune, Solapur, Sangli and Ahmednagar.

Saarrthie aims at providing total agri solutions through soil, water, plant testing facilities along with complete crop nutritional management, using its range of plant nutrient products which include micronutrients. These centres also provide marketing linkage to the farmers for his farm produce with product buyback and retailing. The main aim is to provide a complete basket of solutions and techno-commercial services to ensure higher yields and thus profitability of farmers. Each Saarrthie extension centre operates from a centrally located office in a potential area/market place. Each centre is managed by an Agronomist who is assisted by a team of supervisors and technical assistants.

Each Saarrthie centre offers the following services to ensure higher yields to farmers and marketing opportunities:

- Soil, water, plant testing facilities for the member farmers,
- Farmer advisory through prescription, expert advice, field visits, crop guidance,
- Provide complete range of plant nutrition products through its distribution network,
- Knowledge dissemination through audiovisual training aids, etc.
- Provide marketing linkages through tie-ups with product procurement agencies for food processing industries, etc.
- Visit by experts and arranging crop seminars,
- Facilitate in obtaining crop loans, crop insurance and weather insurance.
- Provide information about agriculture development programmes of State and Central government.

3.5.2.2 Diagnostic Facilities:

The research and development (R & D) is supported by a well equipped soil, water, plant and fertilizer testing facility under the Agri Lab service which currently handles around 10,000 samples per year. The laboratory is well equipped with modern instruments. Further, by using Geographic Information System (GIS), ABFS has developed eleven soil fertility maps for testing micronutrients along with a nutrient blending map for six districts of Maharashtra. These maps are used for identifying soil and crop specific ‘Customized Fertilizer Grades’ for six districts in Maharashtra. These maps also help in improving the benefit cost ratio of the farmers by the agro advisory service provided through the Saarthie centre with special emphasis on nutrition management. The Customized Fertilizer Grades facilitates the application of a complete range of plant nutrients in the right proportion and suits the specific requirement of the plant during different stages of its growth.

3.5.2.3 Membership and Diagnostic Services Fee Structure of DFPCL:

All services provided by the centre are on paid basis. A farmer can be enrolled as a member on payment of a lifetime membership fee and is provided a photo identity card. Services such as soil, water and plant testing are also provided on chargeable basis. Besides, members also have to pay for advisory services on crop acreage basis. Field visits, video shows and crop guidance by a panel of scientists is also provided to farmers. In Table 3.26, the fee structure for membership is indicated.

Table 3.27: Fee Structure for Service Membership -DFPCL

Fruit or Vegetable type	Fee-step 1	Fee-step 2
Pomegranate	Rs 1500 for first three acres	Rs 1000 per acre for each additional acre
Vegetable crop	Rs 300 for first three acres	Rs 150 per acre for each additional acre

Source: DFPCL, Pune office (unpublished material).

The full amount of fees has to be paid by the farmer at the time of enrollment and the farmer is also required to fill in a membership form. In Table 3.28, the fees for diagnostic services provided by DFPCL are indicated.

Table 3.28: Fee Structure for Diagnostic Services Provided by DFPCL

Diagnostic Service for members	Service Charges
Soil Testing	Rs 70 to Rs 400 depending on number of parameters to be tested
Water Testing	Rs 200 per sample and Rs 50 for any one parameter
Plant Tissue	Rs 300 per sample and Rs 250 for each subsequent sample
Plant Testing	Rs 400 per sample
Compost/Organic manure Testing	Rs 1000 per sample
Soil Water Extract for Poly House	Rs 500 per sample

Source: DFPCL, Pune office (unpublished material)

The fee for soil testing ranges from Rs 70 per sample to Rs 400 per sample depending upon the number of parameters to be tested for farmers having membership card. In case on non members the fee ranges from Rs 70 to Rs 450. In case of water testing, the members are charged Rs 200 per sample (Rs 220 for non members) and Rs 50 for any one parameter. In case of Plant tissue/Petiole Testing the fee is Rs 300 per sample for members and Rs 250 for subsequent sample. For non members the fee is Rs 350 per sample and Rs 300 for each subsequent sample.

3.5.2.4 Consultancy Members:

DFPCL is providing technical knowledge to farmers so as to improve quality of produce since 2005-06. The number of farmers enrolled with the company for advisory services is presented in Table 3.29.

Table 3.29: Number of Members enrolled with DFPCL in Maharashtra

Centre/ District	2005-06	2006-07	2007-08	2008-09	2009-10
Manchar/Pune	734	298	151	101	207
Sangamner/Ahmednagar	529	599	298	451	221
Pimplegaon/Nashik	-	325	83	51	46
Sangola/Solapur	-	18	363	229	287
Satana/Nashik	-	-	86	220	223
Tasgaon/sangli	-	-	15	94	95
Aurangabad/Aurangabad-	-	-	-	32	221

Source: DFPCL, Pune Office, (unpublished material).

It can therefore be observed that since inception, DFPCL has been providing advisory services to more than 1000 farmers each year across all seven centres in Maharashtra for different fruit and vegetable crops.

3.5.2.5 Global Gap Certification:

Food safety and quality of agro food have now become an important issue in an era of trade liberalization. As horticultural produce has high export potential the Sanitary and Phyto Sanitary standards imposed by the developed countries must be applied so that they do not serve as an impediment to trade. The ABFS division of DFPCL therefore helps farmers to obtain Global Gap Certification so that they can capitalize on the opportunity to export to the high valued European and US markets. ABFS has helped farmers to obtain certification from “Food Cert B.V.” which is a Holland based certification body. ABFS also conducts training programmes for farmers to enable them to develop standards which can be easily audited and thus promotes Good Agricultural Practises (GAP). The training programme creates awareness among farmers on Integrated Crop management, Integrated Pest Control, Quality Management System, Hazard Analysis and Critical Control Points and Worker Health and Safety. Further, ABFS also helps farmers in post harvest handling, grading and packaging of produce.

The membership fee for Global Gap certification is Rs 4500 and for Deepak GAP it is Rs 3000 in case of fruit crop and for vegetables it is Rs 3500 and Rs 2000 respectively. The number of members registered for Global Gap certification is indicated in Table 3.30

Table 3.30: Number of Members enrolled with DFPCL for Global Gap Certification

Centre/ District	2005-06	2006-07	2007-08	2008-09	2009-10
Manchar/Pune	-	-	-	-	-
Sangamner/Ahmednagar	-	-	-	-	-
Pimplegaon/Nashik	-	49	156	329	174
Sangola/Solapur	-	-	1	48	43
Satana/Nashik	-	-	-	12	4
Tasgaon/Sangli	-	-	-	43	29
Aurangabad/Aurangabad-	-	-	-	-	7

Source: DFPCL, Pune Office, (unpublished material).

It can be observed from Table 3.29 that DFPCL is making efforts to help farmers to get their produce certified so that they are in a position to export their produce.

3.5.2.6 Procurement Activities of DFPCL:

ABFS offers services to domestic buyers, international buyers and processors.

Domestic Buyers:

ABFS considers marketability along with the production planning of crops for its farmer members. The initiative of marketing the farm produce in the domestic market ensures a better price to the farmers. ABFS conducts training programmes to create awareness on Integrated Crop Management, Integrated Pest Control, Quality management System, Hazard Analysis and Critical Control Points and Worker Health and Safety (HACCP) among its members.

ABFS makes efforts to maintain high standards of quality right from procurement till the final packaging and each stage is stringently scrutinized. ABFS technical team guides farmers on maturity/harvest index in order to harvest at the right stage. Each produce is harvested as per the requirement of the customer and there is trained manpower right from the stage of harvesting till transportation to the market.

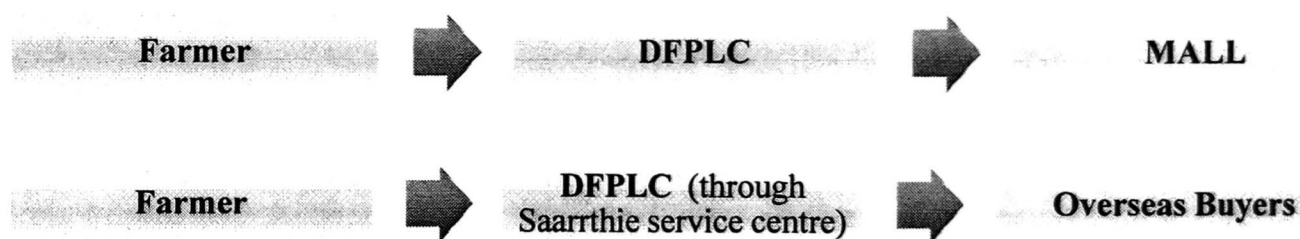
International Buyers:

Exports of agricultural commodities have gathered momentum with the opening up of the economy and WTO agreement. However, trade in agriculture also requires products to comply by Sanitary and Phyto Sanitary measures as several western countries are imposing stringent food standards. ABFS has therefore been helping farmers to obtain Global Gap Certification from “Food Cert B.V.” which is a Holland based certification body. The supply chain of ABFS is also well developed to fulfill the needs of overseas buyer on time. ABFS also has its own R&D department to provide effective solutions for improving quality produce. Presently ABFS is servicing customers from Middle east, Europe and U.K.

Processor:

ABFS has specialized in fruit processing in order to provide a complete basket of solutions and services to the farmers. ABFS provides the complete solution right from washing, selecting, crushing, peeling, pulping and Vapor Heat Treatment of raw fruits and packaging. It also provides technical guidance regarding the right time to harvest the crop so as to prevent spoilage or damage to the fruit. The clients in this category are juice and pulp processors.

After understanding the operations of DFPCL, the supply chain of this company is observed as follows:



Thus in this chapter the socio-economic profile of sample farmers and sample district and taluka was observed. Further, the features of EMC (DFPCL in our study)) was also observed. Against this background in Chapter 4 we have analysed the marketing operations of agents trading in TMC and EMC and observed their benefits and constraints.

Chapter 4

Comparison of Benefits and Constraints for Agents trading in TMC and EMC

4.1 Introduction:

It was noted earlier, that amendments were made in the APMC act, with the purpose of dismantling the monopoly of APMC in agricultural marketing and encouraging other players. These players have an opportunity to bring about an efficient supply chain by sourcing vegetables and fruits directly from farmers, thus giving them a better price and also reducing wastage. Accordingly private players entered agricultural markets so as to provide several options to the farmer to sell their produce. In this chapter therefore an attempt is made to compare the marketing operations in TMC and EMC and observe the benefits as well as constraints in each channel with the help of field level data collected from sample farmers.

4.2 Distribution of Sample Farmers as per Operation Holdings:

Before analyzing the marketing operations of TMC and EMC, the profile of the farmers is briefly discussed. In Table 4.1 the sample farmers are classified according to their land holding size. It can be observed that for the entire sample of onion farmers, maximum (34 percent) were in medium category while in case of pomegranate it was in small (44.7 percent) category.

Table 4.1: Distribution of Operational Land holdings (Net Operated Area) (%)

Sr. No.	Classification	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
1	Marginal (<1 ha)	22.9	0.0	17.0	2.9	33.3	5.3
2	Small (1-2 ha)	14.3	8.3	12.8	45.7	33.3	44.7
3	Semi Medium (2-4 ha)	28.6	25.0	27.7	28.6 ¹	0.0	26.3
4	Medium (4-10 ha)	28.6	50.0	34.0	20.0	33.3	21.1
5	Large (10 & >10 ha)	5.7	16.7	8.5	2.9	0.0	2.6
	Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Survey Data.

Table 4.2: Characteristics of Selected Households as per Land Holding Classification

Sr. No.	Characteristics	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
A	<i>Av Age of Head (years)</i>						
1	Marginal	40.87	0.00	40.86	38.00	40.00	39.00
2	Small	44.60	70.00	48.83	46.12	32.00	45.29
3	Semi-medium	50.80	48.67	50.31	52.70	0.00	52.70
4	Medium	50.10	46.17	48.62	44.29	40.00	43.75
5	Large	54.00	52.50	53.25	42.00	0.00	42.00
B	<i>Av. Education of Head (Years)</i>						
1	Marginal	8.63	0.00	8.63	15.00	9.00	12.00
2	Small	10.60	15.00	11.33	9.87	15.00	10.17
3	Semi-medium	8.10	9.67	8.46	9.90	0.00	9.90
4	Medium	9.20	9.33	9.25	11.71	10.00	11.50
5	Large	15.00	8.00	11.50	16.00	0.00	16.00
C	<i>Av. Family Size (No.)</i>						
1	Marginal	4.75	0.00	3.75	4.00	6.00	5.00
2	Small	3.60	3.00	3.50	4.94	3.00	4.82
3	Semi-medium	5.10	6.00	3.30	6.00	0.00	6.00
4	Medium	5.80	5.16	5.56	5.57	4.00	5.37
5	Large	5.50	7.00	6.25	7.00	0.00	7.00
D	<i>Main Occupation (% to total)</i>						
1	Marginal						
a	Agriculture	100.0	0.0	100.0	100.0	100.0	100.0
b	Allied	0.0	0.0	0.0	0.0	0.0	0.0
c	Other	0.0	0.0	0.0	0.0	0.0	0.0
2	Small						
a	Agriculture	100.0	100.0	100.0	93.8	0.0	88.2
b	Allied	0.0	0.0	0.0	0.0	0.0	0.0
c	Other	0.0	0.0	0.0	6.3	100.0	11.8
3	Semi Medium						
a	Agriculture	90.0	100.0	92.3	90.0	0.0	90.0
b	Allied	0.0	0.0	0.0	0.0	0.0	0.0
c	Other	10.0	0.0	7.7	10.0	0.0	10.0
4	Medium						
a	Agriculture	100.0	100.0	100.0	100.0	100.0	100.0
b	Allied	0.0	0.0	0.0	0.0	0.0	0.0
c	Other	0.0	0.0	0.0	0.0	0.0	0.0
5	Large			0			0
a	Agriculture	100.0	100.0	100.0	0.0	0.0	0.0
b	Allied	0.0	0.0	0.0	0.0	0.0	0.0
c	Other	0.0	0.0	0.0	100.0	0.0	100.0
6	Total						
a	Agriculture	97.1	100.0	97.9	91.4	66.7	89.5
b	Allied	0.0	0.0	0.0	0.0	0.0	0.0
c	Other	2.9	0.0	2.1	8.6	33.3	10.5

Source: Field Survey Data.

Further, the characteristics of selected households as per land holding classification is indicated in Table 4.2. It can be observed that the average age of the head of the household for onion farmers was highest in case of large farmers in case of both TMC and EMC. In case of pomegranate farmers, the average age of the head was highest in case of semi-medium farmers for TMC, while this group did not exist for EMC. The average family size was highest for large farmers across the sample size. As expected agriculture is also the main economic activity of majority of farmers in the sample.

The method of cultivation and farming practices adopted by farmers is indicated in Table 4.3. It can be observed that more than 80 percent of farmers in the sample used fertilizers and barely 1 or 2 farmers did not use fertilizers and thus practiced organic farming. All farmers in the sample had irrigation facilities.

Table 4.3: Modern Practices and Methods of Cultivation of Selected Households

Sr. No.	Particulars	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
1	Av Area under crop (ha)	1.15	2.18	1.41	1.13	0.93	1.12
2	Fertiliser used						
	a) % of farmers to total	97.1	83.3	93.6	97.1	100.0	97.4
	b) Per ha fertiliser use (qtls)	9.2	6.1	8.0	22.6	11.8	21.9
3	Organic/No Fertiliser Use						
	a) % of farmers to total	2.9	16.7	6.4	2.9	0.0	2.6
4	Irrigation Use						
	a) % of farmers to total	100.0	100.0	100.0	100.0	100.0	100.0
	b) No. of Irrigation/ha	11.6	6.2	9.5	15.2	23.2	15.8
	c) Sprinkler-% of farmers to total	0	0	0	0	0	0
	d) Drip-% of farmers to total	5.7	8.3	6.4	34.3	33.3	34.2

Source: Field Survey Data.

The amount of family labour and hired labour in case of onion and pomegranate cultivation is indicated in Table 4.4. It can be observed that out of total labour employed, on an average across the entire sample of farmers, about 73 percent was hired, while 27 percent was family labour. In case of hired labour, for both the crops, more female labour was hired as compared to male. Out of total labour cost, 68.5 percent of the cost was for hired labour while 31.5 percent was for family labour.

Table 4.4: Comparison of Labour Hiring and Labour cost

Sr. No.	Labour	Onion			Pomegranate		
		TMC	EMC	Total	TMC	EMC	Total
I	No. of Labour (days/ha)						
A	Family Labour						
1	Male	39.1	29.1	35.1	52.7	28.6	51.1
2	Female	39.8	15.9	30.4	37.9	28.6	37.3
3	Animal labour	8.4	4.9	7.0	8.8	7.1	8.7
4	Machine	4.0	2.3	3.4	0.6	0.0	0.5
	Total Family labour	91.3	52.2	75.9	99.9	64.3	97.6
	% to Total Labour	29.8	18.6	25.6	28.1	15.0	27.0
B	Hired Labour						
1	Male	68.7	75.7	71.5	120.6	125.0	120.9
2	Female	143.9	150.3	146.4	131.4	221.4	137.3
3	Animal labour	1.8	1.7	1.8	1.9	7.1	2.3
4	Machine	0.8	0.3	0.6	2.3	11.4	2.9
	Total Hired labour	215.3	228.0	220.3	256.3	365.0	263.4
	% to Total Labour	70.2	81.4	74.4	71.9	85.0	73.0
C	Total Labour						
1	Male	107.8	104.8	106.6	173.3	153.6	172.0
2	Female	183.7	166.2	176.8	169.3	250.0	174.6
3	Animal labour	10.3	6.6	8.8	10.7	14.3	10.9
4	Machine	4.9	2.6	4.0	2.9	11.4	3.4
	Total Labour	306.6	280.2	296.2	356.2	429.3	361.0
II	Cost of Labour						
A	Family Labour						
1	Male	3921	2906	3521	5268	2857	5109
2	Female	3193	1270	2436	2996	2286	2950
3	Animal labour	2516	1468	2104	2749	2500	2732
4	Machine	1722	5907	3369	1956	0	1826
	Total Family labour cost	11351	11552	11430	12969	7643	12617
	% to Total Labour Cost	34.4	34.8	34.6	32.8	16.5	31.5
B	Hired Labour						
1	Male	6665	7572	7022	11973	12500	12008
2	Female	11712	12023	11834	10503	17714	10979
3	Animal labour	536	516	528	887	2143	970
4	Machine	2692	1491	2220	3209	6429	3421
	Total Hired labour cost	21605	21602	21604	26572	38786	27378
	% to Total Labour Cost	65.6	65.2	65.4	67.2	83.5	68.5
C	Total Labour Cost						
1	Male	10586	10478	10543	17241	15357	17117
2	Female	14905	13293	14270	13499	20000	13929
3	Animal labour	3052	1985	2632	3636	4643	3702
4	Machine	4414	7399	5589	5164	6429	5248
	Total Labour Cost	32957	33154	33034	39540	46429	39995

Source: Field Survey Data.

4.3 Economics of Cost of Cultivation:

Per hectare cost of cultivation of onion is indicated in Table 4.5. The paid out cost for sample farmers in TMC was marginally higher than that for those in EC. Out of total paid out costs, maximum cost in both channels was for hired labour which in both cases was about 32 percent. The cost on homegrown inputs, fertilizers and manure constituted 18.7 percent of paid out cost in case of TMC and 21 percent in EMC. The cost of pesticide was 7.2 percent and 10.6 percent for TMC and EMC respectively of paid out cost. Irrigation charges constituted little more than 4 percent of paid out cost in both channels.

Table 4.5: Economics of Cost of Cultivation of Onion and Pomegranate (Rs/ha)

Sr. No.	Items	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
1	Hired Labour				
i)	Male	6665	7572	11973	12500
ii)	Female	11712	12023	10503	17714
iii)	Animal labour	536	516	887	2143
iv)	Machine	2692	1491	3209	6429
	Total	21605	21602	26572	38786
2	Maintenance Expenses				
i)	Owned Animal	3300	2409	3340	1786
ii)	Machinery	2258	2792	2665	8929
	Total	5558	5201	6006	10714
3	Cost on Material Input				
i)	Seed				
a	Home grown	1842	933	0	0
b	Purchased	6933	5924	145	1714
c	Total	8775	6857	145	1714
ii)	Fertilisers				
a	NPK	7665	5625	19808	13500
iii)	Manure				
a	Owned	4100	3323	3828	4286
b	Purchased	8467	10738	13498	28571
c	Total	12567	14061	17326	32857
iv)	Pesticides	4836	7055	29889	28214
v)	Irrigation	2945	3127	6665	4286
vi)	Micro Nutrients	1884	1989	6789	8000
4	Depreciation	868	367	884	857
5	Land Revenue	264	483	541	357
6	Rent Paid for Leased in land	149	0	2204	0
	PAID OUT COST	67118	66367	116828	139286
7	Family Labour				
i)	Male	3921	2906	5268	2857
ii)	Female	3193	1270	2996	2286
iii)	Animal labour	2516	1468	2749	2500
iv)	Machine	1722	5907	1956	0
	Total	11351	11552	12969	7643
8	Total Cost of Cultivation	78469	77919	129797	146929

Source: Field Survey Data.

Overall, it is observed that the total paid out cost for TC was Rs 67118/- per hectare while in case of EMC it was Rs 66367/- per hectare. However, if imputed value of family labour is included, the cost of cultivation increases by about 17 percent per hectare for both channels.

The technology used in crop cultivation is indicated in Table 4.6. It can be observed that the per hectare chemical fertilizers as well as organic fertilizers in case of onion was higher in EMC than TMC. However, for pomegranate, more organic fertilizers were used in EMC, while TMC used more chemical fertilizers. Overall the use of more organic fertilizers by EMC may be due to the influence of agro advisory services of DFPCCL to meet their niche demand.

Table 4.6: Technology Used For Crop Cultivation

(Average Per ha)

Sr. No.	Particulars	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
A	Inputs				
1	Chemical Fertilizer (qtls)	9.55	13.37	21.92	11.00
	Standard deviation	8.59	14.62	39.58	12.12
2	Organic Fertilizer (qtls)	106.87	238.33	160.71	203.33
	Standard deviation	95.04	120.47	184.39	135.67
	% using composted fertilizer (may specify)	86.47	93.75	87.30	95.77
3	Organic Pesticide (Kgs)	0.0	0.0	0.0	0.0
	% Farm certified as organic	0.0	0.0	0.0	0.0
4	Machinery used	-	-	-	-
5	% irrigated area	100.0	100.0	100.0	100.0
6	Seed (kg)	12.56	23.00	0.00	0.00
	Standard deviation	8.98	15.64	0.00	0.00
	Sources (% o total)				
	Home grown (%)	25.71	8.33	0.00	0.00
	Purchased (%)	62.86	75.00	0.00	0.00
	Home grown & Purchased (%)	11.43	16.67	0.00	0.00
7	Av. Area Cultivated (ha)	2.93	4.88	2.49	2.53
	Standard deviation	3.53	3.39	2.23	3.01
8	Total Production (qtls/ha)	332.6	350.6	110.1	211.1
	Standard deviation	270.44	431.45	151.94	178.43

Source: Field Survey Data.

Table 4.7 indicates the production and productivity of onions and pomegranates. It can be observed that the productivity was higher in case of EMC for both onions and pomegranates.

Table 4.7: Details of Production of Onion and Pomegranate

Sr. No.	Items	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
1	Main Product (Qt)	13405.7	9169	4356.5	591
2	By Product (qt)	0	0	0	0
3	Productivity (qt/ha)	332.6	350.6	110.1	211.1

Source: Field Survey Data.

The details on cost of production of onion and net returns accruing to farmers in case of sales to TMC and EMC are indicated in Table 4.8. It can be observed that the productivity of onions per hectare is higher in EMC (350.6 qt/ha) as compared to TMC (332.6 qt/ha), i.e. by 5 percent. It can be observed that the auction price in TMC was higher than that realized by those farmers who sold through EMC. It can be observed from Table 4.8 that while the price in the regulated market was Rs 711/- per quintal, those who sold in EMC received Rs 694/- per quintal. (It may be noted that Rs 711/- per quintal which is the regulated market price and Rs 694/- which is EMC price, is the weighted average price¹ of the sample farmers which is calculated by using quantity sold as weights). Farmers who sell through regulated markets do not sell their entire produce immediately after harvest to avoid distress sales due to glut in the market. They stock their produce to gain advantage of lean period rise in price. In our sample it was observed that in TMC, sale was more in lean season and hence farmers obtained higher prices. In EMC however, farmers sold to the agent of the company soon after harvest and hence may have realized lower prices. However, the important point is that farmers who sold in TMC had to incur marketing costs which reduced the net price received by them, whereas farmers who sold through EMC did not have to incur marketing costs as the agents of the company purchased the produce from the farmer's field. Hence they did not incur any transport or commission charges or any other market charges.

¹ In order to get average price per quintal realized by farmer, weighted average price was calculated as follows: $\text{Weighted Average Price} = \frac{\text{Sum (Quantity sold*Price)}}{\text{Sum of Quantity sold}}$.

Table 4.8: Details of Cost of Production and Net Returns (Onion & Pomegranate)

Sr. No.	Items	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
1	Per ha Cost of Cultivation (including family labour)	78469	77919	129797	146929
2	Gross return/Output (Rs./ha)	236597	243376	420334	1287710
3	Cost of Production (Rs./qtls) including family labour	236	222	1179	696
4	Cost of Production (Rs per quintal) considering only Paid Out Cost	202	189	1061	660
5	Productivity (qt/ha)	332.6	350.6	110.1	211.1
6	Per Quintal Price realized by farmer (Rs/qtls)	711	694	3819	6100
7	Per ha Net Profit (including family labour) (Rs./ha)	158127	165457	290538	1140781
8	Per ha Net Profit (Rs./ha) considering Paid Out cost	169479	177009	303506	1148424
9	Per Quintal Net Profit (Rs/ctl) considering only Paid out cost	509	505	2757	5440
10	Per Quintal Net Profit (Rs./qtls) including family labour	475	472	2640	5404

Source: Field Survey Data.

The net profit made by farmers (after taking into consideration cost of family labour) who sold onions under TMC was Rs 475 per quintal whereas in case of EMC, it was Rs 472 per quintal. However, in both channels, the net returns per quintal increase by 7 percent when only Paid out costs are taken into consideration.

In case of pomegranate however, it can be observed from Table 4.8 that the price realized by the farmers who sold through EMC is 60 percent higher than that realized by farmers who sold through TC. While farmers who sold through TMC realized Rs 3819 per quintal, those who sold through EMC realized Rs 6100/- per quintal. This difference in price further increases by 25 percent when we consider marketing costs. This is because as we know in case of sales to regulated markets, the farmer incurs marketing costs while these are not incurred by farmers who sell through EMC. The per quintal net profit for pomegranate considering only paid out costs of cultivation is 3.8 times that in EMC compare to TMC and 3.9 times when family labour as a cost of cultivation is included. The productivity of pomegranates in case of sample farmers in EMC is little less than double that of those in TMC. This is possibly because the company provides extension services to farmers, who are thus able to cultivate quality produce. The sale price in EMC is also much higher mainly because the produce is of superior quality.

4.4 Price Spread and Marketing Costs of Onion and Pomegranate:

In the marketing of agricultural commodities, the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of farm produce is often known as price spread. In Table 4.9, the price spread and marketing costs for onions based on the data collected from our field survey is indicated.

It can be observed from Table 4.9 that in TMC although the farmers in the sample received Rs 711/- per quintal, they had to incur marketing costs of Rs 74.94/- per quintal and hence their net price after deducting marketing costs was Rs 636.06/- per quintal. (It may be noted that Rs 711/- per quintal is the weighted average price of the sample farmers which is calculated by using quantity sold as weights). The farmers sold to wholesalers who incurred marketing costs and margins of Rs 445.05/- per quintal. There was also wastage of onions during the time taken to transport the produce from the APMC to the retail outlets. The sale price of the onion retailer was Rs 1437.65 /- per quintal. Finally, it can be observed from Table 4.9 that the share of the farmer in the retailer's price under TMC is 44.24 percent, while marketing costs as a percentage of retailer's price is 44.25 and marketing margins as percentage of retailer's price is 11.05 percent.

With respect to sales through EMC, it can be observed that although the sample farmers received a lower price than the auction price in TMC, they did not have to incur marketing costs as their produce was picked up by the agent of the company from the farmer's field. Hence Rs 694/- was the net price received by the farmers under EMC which was about 9 percent higher than the price received by farmers who sold through TMC. From the farmers' field, the produce goes to retail outlets such as malls or in some cases it is exported. The margin of the retailer in EMC is obviously much higher than that observed in TMC and is 44.9 percent. It may be noted here that the retailer's margin includes the margin of DFPCL which purchases the produce from farmers and supplies it to the retail outlet. About 42 percent of retailer's margin is the share of DFPCL for its service charges. The share of the farmer in retailer's price under EMC is 43.4 percent which is negligibly lower than those who sold under TMC. The marketing channel under EMC is much shorter than that under TC. The wholesalers are eliminated under EMC and retailer's margin is higher. The retail price under EMC is also higher than under TMC because the agent of the company who buys the produce, normally does sorting of the produce and buys only selected produce. Hence as produce is of better quality in EMC, the retail price is also higher.

Table 4.9: Price Spread and Marketing Costs for Onion (2009)

Sr. No.	Price Spread	Rs per quintal	
		TMC	EMC
I	Price received by farmer	711	694
II	Total Marketing costs of farmer	74.94	-
	(a) transport to APMC	23	-
	(b) loading and unloading	2	-
	(c) weighing & other related expenses	7.30	-
	(d) commission	28.44	-
	(e) standard deduction considered as wastage	14.2	-
	Net Price received by farmer	636.06	694
	Net profit (Net Price received-Paid Cost)	434.06	405.0
III	Marketing Costs and margins of wholesaler	445.05	-
	(a) market fee	3.32	-
	(b) gunny bags	32	-
	(c) stitching gunny bag	3	-
	(d) hamali	6	-
	(e) wastage during transport	284.4	-
	(f) transport to terminal market	95	-
	(g) wholesaler's margin	21.33	-
	Purchase price of wholesaler plus marketing costs & margins	1156.05	-
IV	Marketing cost and margins of Retailer	281.6	906
	(a) Hamali from point of purchase to tempo	10	2
	(b) Transport to retail outlet	10	12
	(c) Miscellaneous expenses such as cess to corporation, watchman for unsold stock, supermarket overheads, etc	2	103
	(d) Wastage	115.60	70.5
	(e) Retailer's margin	144	718.5
	(b) sale price of retailer	1437.65	1600
V	Share of farmer (%) in retailer's price	44.24	43.4
VI	Marketing Costs as % of retailer's price	44.25	11.7
VII	Marketing margins as % of retailer's price	11.05	44.9
VIII	Modified Measure of Marketing Efficiency	0.87	0.77

Source: computed from field survey data

In Table 4.10, the price spread and marketing costs of pomegranate are indicated. In case of sales through TMC, it can be observed that sample farmers had to incur marketing costs of Rs 330/- per quintal, and hence the farmers' net price was Rs 3489/- per quintal which was reduced by 9 percent from auction price. In case of pomegranates and other fruits, the commission charges to be paid to the agent is 8 percent which is double that for other agricultural commodities. This is mainly because the risk is higher in case of fruits. Discussion with commission agents in APMC, Satana revealed that the commission agent passes on 2 percent of his commission to the wholesaler who buys the

produce from the farmer which serves as a discount given for bulk purchase. Thus per quintal, the farmers had to bear commission charges of Rs 305/- The wholesalers have to bear the market fee which is used for the development of APMC. The purchase price of wholesaler including marketing costs and margins was Rs 5500/- per quintal. When the produce reaches the retailer, marketing costs and margins to the tune of Rs 2000/- were incurred. The sale price of the retailer was Rs 7500/- per quintal. Overall, in TMC it can be observed that the share of farmer in retailer's price was 46.5 percent , marketing costs as percentage of retail price was 20.43 and marketing margins as percentage of retail price was 33.

With respect to sales through EMC, it can be observed that the net price received by sample farmers was Rs 6100/- per quintal which was 75 percent higher than TMC. This huge difference in price received by farmers who sold through EMC can be largely explained by two reasons. First of all, the produce purchased by the agents of EMC is very limited and of very superior quality. The weight of the fruit purchased by them is at least 200 gms , free of defects and the general appearance is good. Further, since it is picked up from their field, the farmer does not have to bear transport or any marketing costs. In contrast, in case of sales through TMC, all produce irrespective of quality is sold through auction. Low quality produce is auctioned at a very low price, while better quality produce fetches a higher price. Again, when the farmers take their produce to the APMC, they have to incur marketing costs. In case of fruits, the commission charges paid by the farmer are double that of other commodities as the risk is higher. Hence, due to these reasons, the farmers who sell through EMC receive much higher prices than those who sell through TMC. In EMC the produce from the farmer's field reaches the retail outlet and the role of wholesalers is eliminated. The retail price for pomegranates under EMC was Rs 8500/- per quintal. The share of farmer in retailer's price was as high as 71.76 percent which was much higher than that under TMC (46.5 percent). Since the supply chain is also shorter in EMC, the marketing costs are only 3.36 percent of retail price. In TMC however, there are cases when there are two wholesalers – one wholesaler is from the local market who participates in the auction and then transports the produce to another wholesaler in a distant market. Thus more intermediaries will obviously increase the mark-up at each level, thereby increasing marketing costs and margins. However, this is bound to happen in case of commodities which are produced in a particular region but demand is throughout the country. For example about 70 percent production of pomegranate is in

Maharashtra but demand for pomegranates is also in Delhi, Lucknow, Agra and other areas where the crop is not cultivated. This increases marketing costs and margins.

It can be noted that wastage in EMC is much lower than that in TMC. This is obvious, because under EMC, only selected fruits are purchased which have minimal or no defect. The retailer's margins are higher in EMC as compared to TMC and while retailer's margin is Rs 1186/- in TMC, the margin is Rs 2114/- under EMC which means that retail margin is about 1.8 times that of TMC. It may be noted that from the retailer's margin about 28 percent is the share of DFPCL for its services provided to the retail outlet. The marketing margins as a percentage of retail price is 24.88 percent in case of EMC, while it was 33 percent in case of TMC. The MME is 2.54 in case of EMC while it is as low as 0.87 in case of TC.

Table 4.10: Price Spread and Marketing Costs for Pomegranate (2009)

		<i>(Rs per quintal)</i>	
Sr. No.	Price Spread	TMC	EMC
I	Price received by farmer	3819	6100
II	Total Marketing costs of farmer	330	-
	(a) transport to APMC	23	-
	(b) loading & unloading	2	-
	(c) weighing & other related expenses	-	-
	(d) commission	305	-
	Net Price received by farmer	3489	6100
	Net Profit (Net price received- Paid Out cost)	2428	5440
III	Marketing Costs and margins of wholesaler	1681	-
	(a) market fee	36.6	-
	(b) hamali	2	-
	(c) wastage during transport	245	-
	(d) transport to terminal market	105	-
	(e) wholesaler's margin	1292.4	-
	Purchase price of wholesaler plus marketing costs & margins	5500	-
IV	Marketing cost and margins of Retailer	2000	2400
	(a) Hamali from point of purchase to tempo	10	2
	(b) Transport to retail outlet	2	109
	(c) Miscellaneous expenses such as cess to corporation, watchman for unsold stock	2	105
	(d) Wastage	800	70
	(e) Retailer's margin	1186	2114
	(f) sale price of retailer	7500	8500
V	Share of farmer (%) in retailer's price	46.5	71.76
VI	Marketing Costs as % of retailer's price	20.43	3.36
VII	Marketing margins as % of retailer's price	33	24.88
VIII	Modified Measure of Marketing Efficiency (MME)	0.87	2.54

Source: computed from field survey data

The Benefit Cost Ratio (BCR) for Onion and Pomegranate for the farmer is indicated below in Table 4.11. It can be observed that the BCR obviously reduces for both onion and pomegranate when family labour is included in cost of production. The BCR is higher in EMC for both horticultural crops in EMC as compared to TC. In case of pomegranates especially, the BCR is much higher in EMC as compared to TC. This is because as explained earlier, the price received in case of sales through EMC is 75 percent higher than that through TMC.

Box 4.1: Perception about farmers on marketing of onions in Satana taluka

Onion is cultivated in three seasons in Satana taluka, namely kharif, late kharif and rabi. The farmers however explained that kharif season crop has low shelf life and losses include rotting or decay, sprouting and loss in weight. Rabi onion however, can be stored for 5-6 months and farmers prefer to store it in order to get benefit of higher prices. Farmers stated that rabi onion is normally harvested in April-May. At this time however, the prices in APMC are very low. They therefore sell only that quantity which will meet their financial obligations as sales in April-May are normally distress sales. They prefer to store their produce and sell in the month of October when prices are very high and they are able to gain from lean period prices. This can also be observed from the fact that prices ruling in the APMC market, Satana, were Rs 540/- per quintal in April, 2009, but increased to Rs 1450/- per quintal in October, 2009. Thus farmers gained as much as Rs 910/- per quintal when they stored their produce for about 6 months. Most farmers had onion chawls and were thus in a position to store their produce. However, while sales in lean period proved to be beneficial in terms of realization of better prices, by and large about 20 percent of the crop was spoilt during storage. Splitting of bulbs, discoloration, shrinkage and descaling accounted for both qualitative and quantitative losses. Poor quality produce was normally sold at 30 percent of sale price. There were instances when losses were even to the extent of 40 percent. But farmers were reluctant to sell in post harvest period as they considered it as distress sales. Regarding sales in the regulated market, farmers stated that they sold to traders through commission agents. The commission agents facilitated the sales between the farmer and trader. In some cases the commission agent was the brother or close relative of the trader. The main complaint that the farmers had against the commission agent was that besides taking 4 percent commission charges, he also deducted the payment of 2 kgs for every quintal sold, saying that it is wastage. They considered this practice of the commission agent as exploitation. Further, sales took place in the open and there was no provision in Satana APMC for covered sales. Due to rains, often the quality of their produce deteriorated and they suffered huge losses. Hence sales should take place in covered space. They however stated that before reaching the regulated market for sale, they were aware of the price prevailing in the regulated market.

Table 4.11: Benefit Cost Ratio for Onion and Pomegranate

Particulars	TC (cost of production includes only Paid out costs)	EMC (cost of production includes only Paid out costs)	TC (cost of production includes family labour)	EMC (cost of production includes family labour)
BCR for onion	2.15	2.67	1.69	2.13
BCR for Pomegranate	2.29	8.24	1.96	7.76

Source: computed from field survey data

Box 4.2: Perception about Traders Operating in APMC, Satana for purchase of onions

Onion is an important crop in Satana taluka and about 1 lakh quintals of onions are traded every month in the APMC. Some of the traders operating in the APMC have huge turnover and one trader who was interviewed that his turnover was 7 lakh quintals. The trader noted that immediately after purchase, he sold the produce to other traders located in distant markets all over the country, as well as in overseas markets. The sale price to the distant trader was fixed on telephone and normally the trader earned a margin of 1 to 3 percent depending upon the demand and supply position of onions. In certain years, there is crop failure in other states, while Nashik has a good crop. At such times there is huge demand for their stocks and they earn higher margins. However, the trader noted that marketing of onions is risky and there are instances when they also incur losses. While transporting the produce also in some cases the trucks do not leave on time and transport agents increase the rate at the last minute. There are instances when trucks get lost and the produce does not reach the destination.

The time taken to reach the distant market was normally 4 to 5 days and about 5 percent of the produce was spoilt and hence wasted during transport. In case of overseas sales, the trader revealed that he exports to Malaysia, Singapore, Dubai and Colombo and his cost of transport to Mumbai port from Satana APMC was Rs 950/- per tonne while shipping cost to the destination was Rs 2000/- to Rs 3000/- per tonne. The produce then reaches the agent in overseas market from where it reaches the supermarkets.

The traders were however not satisfied with the marketing facilities available in Satana, APMC. Though sales were through auction method and supervision took place, there were no godown facilities and poor maintenance of the market with low quality internal roads. Although facilities were available for price display this was not done, and banking facilities were poor. The traders complained that overall the conditions in the APMC were very unhygienic and lacked cleanliness. In the rainy season especially, the conditions got worse and to conduct auctions during the rainy season was very difficult as the produce gets damaged. Farmers sometimes put good quality of produce on top, while lower quality was below. In case this was told to them by the commission agent, the farmers abused him. Overall traders were not satisfied with facilities in Satana APMC.

4.5 Reason for Preferring the Marketing Channel:

The reasons for preferring the marketing channel is indicated in Table 4.12. It can be observed that in case of onion under TMC maximum responses pertained to assured

sales followed by fair price. They were also influenced by friends and relatives to participate in auctions and were in the habit of selling in APMC. In case of EMC, assured sales, fair price, proximity and superior services were the main reasons for preferring this channel.

Table 4.12: Reason for Preferring the Marketing Channel

Sr. No.	Particulars	(% to total responses)			
		Onion		Pomegranate	
		TMC	EMC	TMC	EMC
1	Habit	10.5	5.3	8.1	0.0
2	Influence of friend, relatives, neighbours	12.8	7.9	8.1	8.3
3	Assured sales	19.5	15.8	18.4	16.7
4	Higher/Fair price	13.5	15.8	15.4	25.0
5	Low cost of Marketing	3.8	2.6	8.1	8.3
6	Less Physical loss	7.5	10.5	9.6	8.3
7	Proximity	9.0	15.8	8.8	0.0
8	Logistical Support	1.5	0.0	0.7	0.0
9	Access to Inputs	0.0	0.0	0.0	0.0
10	Hidden cost/bribes in alternative channel	3.0	5.3	4.4	0.0
11	Longer waiting time and formalities in alternatives channel	3.8	2.6	5.9	8.3
12	Superior services	9.0	15.8	8.8	8.3
13	Superior Infrastructure	6.0	2.6	3.7	0.0

Source: Field Survey Data.

In case of pomegranate, assured sales and fair price was the most common response for preferring TMC, while in EMC higher price was the most important reason for preferring this channel. It was earlier observed that farmers who sell pomegranate under EMC received higher prices than those who sold under TMC.

4.6 Post Harvest Losses:

Post harvest losses not only reduce the availability of the fruits but also increase per unit cost of transport and marketing. Reduced availability of the crop increases the consumer's price and also reduces the quality of the fruit. Further, post harvest losses take place at almost all stages of handling. First of all, the standing crop itself may be partly destroyed or may deteriorate in quality due to disease. Most crops are susceptible to diseases which lead to fall in yield. Secondly, farmers themselves store their produce either in their own storage structures or in warehouses. At this stage also there are post harvest losses. Losses also arise during transport mainly due to friction between the produce, lack of availability of cold chains and also poor infrastructure. Rural roads are normally poor quality which increases the time taken to transport the produce from the

point of production to the point of sale. The longer the time taken and poorer the infrastructure, greater will be the post harvest losses. Both onion and pomegranate suffer from post harvest losses at all stages. Before harvest itself, the crops are affected by disease which reduces the supply of the crop.

Box 4.3: APMC Satana

Satana APMC was established on 24th September, 1948. The produce from 165 villages in the district reaches this regulated market. The APMC also has a Market Board. The main development under Market Board Area is a safety wall compound, vegetable market shed, business shed, electricity, godowns, canteen, bank, telephone, watershed, farmer shed, water culler, and television. About 37 agricultural commodities, mainly foodgrains, oilseeds, fruits and vegetables are auctioned in this market. There is also a livestock market in the market area.

The average monthly arrival of onions in this market in 2009 were about 1.35 lakh quintals, while that of pomegranates is 7704 crates of 20 kgs each. It was observed in the APMC, that the auction prices of pomegranates vary widely according to the quality. In case of poorest quality, the auction price was Rs 75 for 20 kg while in case of best quality, the auction price was Rs 700 for 20 kgs. The poor quality pomegranates were purchased by processors who wanted to buy the produce to convert it into pomegranate juice.

In case of pomegranates, auction takes place at noon, while in case of onions auction is normally conducted in the evening. Satana APMC does not have very satisfactory infrastructure facilities. Sale through open auction is mostly done in the open and facility is not available for covered sales which cause great hardships to farmers and traders. Internal roads are of poor quality which again pose problem during monsoons. Telephone and banking facilities are limited.

Market Charges at APMC, Satana

Type	From	On Quantity	Rate (Rs)
Market fee	Trader (buyer)	On per Rs 100 price	1
Supervision	Trader	Per quintal	0.05
Commission	Farmer	On per Rs 100 price	4 for onion and 8 for pomegranates
Weighing and other related costs	Farmer	Per quintal	7.30 for onions. *
Hamali	Farmer	Per quintal	2
Deduction	Farmer by commission agent	Per quintal	2 kg

Source: Satana APMC. * In case of pomegranate, the produce arrives in crates of 20 kg each and hence weighment expenses are not charged.

Discussions with the APMC Secretary revealed that the APMC has a Market Committee consisting of 36 members. The members are elected by voting. The fee to obtain license for commission agent is Rs 200 per year and since the commission agent earns 4 percent as commission and 8 percent for fruits, the number of commission agents entering the market is increasing. This is creating more competition in the market which enables farmers to get better and more competitive prices. Further, in APMC, the Market Committee operates and hence farmers are assured of their payment. In case of sales to private players however, there are cases when payment is not made to farmers and the private party after lifting the produce from the farmer's field ensures payment within a short period but does not honour its commitment. The farmer is unable to trace the party and suffers losses.

The APMC secretary also revealed certain lacuna about the marketing system. He explained that the trader has to give a Bank guarantee of Rs 5 lakh for purchase of produce upto Rs 5 lakhs. In some cases however, the trader exceeds his limit and buys more than his entitlement. In such cases if he does not pay the farmer for produce purchased from him, then it is difficult for the Market Committee to settle this issue through legal methods. The APMC law is weak on this point and suitable amendments are required. There were also instances when payment made by traders to the farmers was delayed. Further, the Market Committee authorities also stated that the receipt given by the trader does not have any legal stand and policy must be addressed to this issue.

Uniform distribution of rainfall for kharif onion is necessary for good yields. However, if the rainfall is excessive and not uniform, it results in humid conditions, which are congenial for many pathogens which have an adverse effect on the onion crop. These pathogens lead to diseases such as purple blotch and basal rot which lead to considerable yield loss. In case of onion there are both qualitative and quantitative losses. In kharif 1998, incidence of purple blotch was reported to be the major disease in Maharashtra which reduced the yield by about 25 percent. After harvest of the crop, there is normally a glut in the market and therefore prices are very low. The lean period price in 2009 for rabi onion was about Rs 900/- per quintal higher than the peak period price. Farmers therefore as far as possible store the produce to avoid distress sales and only sell that quantity to meet their immediate financial obligations. Most farmers have their own onion chawls to store the produce. However, during the process of storage there are post harvest losses which vary from 20 to 50 percent. Storage losses comprise of moisture loss, shrinkage, decay and sprouting. In case onion crop is not stored in a scientific manner, but kept in the open, it leads to sun scalding and the outer skin becomes brittle and breaks and inner scales get damaged. After the glut in the market subsides, i.e after the month of April and May when prices are lowest, and start rising thereafter, farmers begin to bring produce to the market depending upon the rise in price and also the quality of their produce. After sale of produce by the farmer to the trader in the APMC, the produce is transported by the traders to distant markets and the produce often takes 4-5 days to reach its destination. During this period there is wastage of 4-5 percent of the produce. Finally when the produce reaches the retailer, field survey indicates that about 5 to 10 percent gets spoilt. The spoilt produce is normally sold at 30 percent of the price or in some cases even thrown out.

Pomegranate crop is also subject to huge post harvest losses. This crop is highly susceptible to oily spot disease. This disease has become a serious threat for pomegranate growers. Cloudy weather and intermittent rainfall result in this disease which further spreads very easily. This disease causes black spots on the fruit which splits the fruit, resulting in enormous yield losses. In a survey conducted in Maharashtra (www.promedmail.org) in 2007-07, by the National Research Centre on pomegranate, oily spot was found to be the main disease, with 100 percent infection in some orchards. Discussion with farmers revealed that sometimes 60 to 70 percent of the crop is destroyed due to this disease. The prevalence of this disease leads to a severe supply constraint on

the crop and consequent rise in prices. No commercial pomegranate cultivar has been found to show any resistance to oily spot. Besides oily spot disease, there was damage to the produce due to bore and anthracnose which causes huge losses. On the field scorching heat also caused cracking of the fruit. After harvest, the crop is normally traded in the APMC where the farmers bring the produce in crates of 20 kg each. The traders who buy the produce from the farmer often transport it to distant markets. This crop is mainly grown in Maharashtra, but there is huge demand throughout the country due to nutritive and medicinal properties contained in the fruit. The field survey revealed that the crop is transported to distant markets such as Delhi, Agra and Lucknow. During transport, there is injury to the crop due to friction, and also secondary infection of the fruit, which leads to rotting of the fruit and the post harvest loss reported on this count is 10 percent. At the retail stage, the post harvest loss reported was 1 percent. The spoilt produce is often sold at 40 percent of the price.

In Table 4.13, the post harvest loss of the crops from the sample farmers are indicated.

Table 4.13: Per quintal Post-harvest Losses

Post Harvest loss	Onion				Pomegranate			
	TMC		EMC		TMC		EMC	
	Quantity	<i>SD</i>	Quantity	<i>SD</i>	Quantity	<i>SD</i>	Quantity	<i>SD</i>
Loss during storage (kg)	24.90	3.3	4.98	0.82	19.91	3.1	9.70	0.52
Loss during transport	3.95	0.71	3.96	1.17	10.19	1.13	3.64	0.49
Loss at Retail level	6.53	2.18	5.97	1.81	2.93	1.52	1.33	1.13

Notes: *SD*- Standard deviation, Quantity in quintals.

Source: Field Survey Data.

It can be observed from Table 4.13, that post harvest losses are higher in TMC as compared to EMC for both crops. For every quintal of onion stored, a farmer loses about 25 kg under TMC while the loss is only about 5 kg in case of EMC. In case of EMC, farmers mainly dispose of their produce to the agent of the company. Their storage structures were also of better quality and hence there was less decay in the produce. In case of pomegranate also, since quality of produce was better in EMC with better transport and packaging facilities post harvest loss was also less.

The main reasons for the loss as explained by sample farmers are tabulated in Table 4.14.

Table 4.14: Reasons for Post Harvest Loss (percentage of multiple responses)

Reason	Onion		Pomegranate	
	TMC	EMC	TMC	EMC
Perishable nature of the commodity	100	100	56.32	45.00
Long distance to market	45	50	55	0.00
Loss as waited for better prices and the product perished	40	10	0.00	0.00

Source: Field Survey Data.

Onion as we know is a highly perishable commodity. While the Kharif crop has virtually no shelf life, that of rabi is 4-5 months, though the quality begins to deteriorate as the length of the storage period increases. All farmers in the sample noted that one of the important reasons for post harvest loss is the perishable nature of the commodity. Onion is a very important ingredient for cooking purposes and Maharashtra (Nashik district) is a major producer of this crop. Hence it is transported to distant markets such as Kerala, Tamil Nadu and even Bangla Desh. Long distance to the market was therefore also responsible for post harvest losses. As noted earlier, in case of onion there is often a huge difference between lean period and peak period prices for rabi crop and farmers are aware of it. They therefore store the produce in order to reap lean season rise in prices. Some farmers store the produce for about 5-6 months and although, they do get advantage of the rise in price, about 30 to 40 percent of the crop gets spoilt and deteriorates in quality. The low quality produce is sold at about 40 percent of the price.

Pomegranate is also a perishable crop which was an important reason for postharvest loss. In case of TC 55 percent of farmers reported that long distance to the market led to friction of the fruit and caused losses. In case of EMC however, since the crop is collected by the agent of the company in the farmer's field, the farmer does not bear such transport losses. The agents of the company normally buy selected fruits and have better packaging and transport facilities. Hence in EMC post harvest losses on this count were not reported. However, there was some shrinkage in the fruit which reduced the weight of the fruit. Farmers normally sell pomegranate soon after harvest and do not store it. They are well aware of the fact that there is a supply constraint of pomegranates whereas demand is huge.

Box 4.4: Agricultural Marketing through Emerging Marketing Channels

Till date, the most common method of sales of agricultural commodities is through regulated markets. However, with amendments in APMC, a number of corporate are entering into the retail segment especially with respect to fruits and vegetables. Deepak Fertilisers and Petrochemicals Corporation (DFPCL) is one such corporate which not only directly purchases fruits and vegetables from farmers for domestic and export markets but also provides them with extension services through its 'Mahadhan Saarrthie Centres'. These centres provide crop specific and soil specific advisory services to farmers, to build brand loyalty, enhance quality of produce and thus increase farm production. Since inception, the Saarrthie centres have cumulatively serviced about 5440 hectares of land and by 2009-10 the Saarrthie centres had 7189 farmer members. In 2008-09, DFPCL sold 1110 MT of fruits and vegetables while in 2009-10, the quantity increased to 1727 MT. DFPCL does not have its own retail outlet but caters to the requirements of other corporates dealing in retail. Its main customers are Aditya Birla Retail Ltd, Metro Cash & Carry, TESCO India, Future Value Retail Ltd, etc. It also caters to export markets. In 2009-10, DFPCL purchased 123761 kgs of pomegranates from domestic market (mainly from farmers and traders) at the rate of Rs 65 per kg which was exported mainly to Dubai at the rate of Rs 69 per kg. After purchase, packing is done in 3 kg and 5 kg boxes and then transported in refrigerated containers to Mumbai port. In case of onions, in 2009-10, DFPCL purchased 476942 kgs of onion for export to Dubai which were purchased at Rs 8 per kg and sold in overseas market for Rs 10 per kg. DFPCL through its Agri-Business and farming Services has also helped farmers to obtain GAP certification from "Food Cert B.V" which is mandatory in order to export.

Discussions with officials of DFPCL revealed that they are quality conscious in their purchases. Hence besides buying from farmers, they also purchase from traders as traders are willing to give them selected produce while farmers complain to them that if good quality produce is taken away, then the residual has to be sold at very low price in the regulated market. The traders also accommodate the company in case of loss in weight due to shrinkage, moisture loss, etc. In case of purchases from farmers, the company makes immediate payment within a maximum period of 7 days by cheque. The main reason that farmers prefer to sell to DFPCL is that they save on commission charges as well as packing and transport expenses. However, in view of limited demand by DFPCL only few farmers can benefit from better prices and saving on marketing costs. Farmers in general have to therefore depend upon the traditional channel which accepts all the produce.

DFPCL directly sources from farmers and traders on behalf of its customers who normally sell the produce in super markets and malls. In case of onions DFPCL maintained a margin of 1 to 3 percent while in case of pomegranates, the margin was 6 percent while selling to its customers. A discussion with some of its customers revealed that the super markets have a purchase team which decides the price at which the produce will be sold and normally maintain a margin of 10 to 20 percent in its sales. However, it was revealed by some officials in the supermarkets that there are cases when the produce is sold at a loss but the company is able to sustain the loss because it deals in several fruits and vegetables and losses in one item are made up by profits in another agricultural commodity. Further, it was revealed that the price at which the supermarket's competitor was selling the produce was a very important factor determining the price at which the supermarket would fix its selling price. In some cases, the supermarket would immediately reduce its price to the competitor's level, even if it meant a loss to the supermarket. Hence prices are benchmarked depending upon the price of the competitor. Also, if the staff in the supermarket finds that the quality of the produce is deteriorating, they immediately contact the purchase team which immediately gives its decision to sell the produce under "Reduce To Clear" code (RTC code). The officials also noted that thousands of consumers visit the supermarket every day, and therefore the agricultural produce which is displayed for sale is handled by several consumers. This constant handling of the produce leads to deterioration in quality and has to finally be sold at a discount.

4.7 Information Regarding Price Available to farmers:

In order that farmers receive best possible price for their produce, it is necessary that they must be aware of ruling market prices in the APMC where they sell their produce. This will guide them regarding the right time to dispose off their produce. In Table 4.15 details about price information are indicated.

Table 4.15: Details about the transaction cost-Information Costs

Sr. No.	Particulars	% to total responses			
		Onion		Pomegranate	
		TMC	EMC	TMC	EMC
A	Source of price information				
1	Personal information	5.7	16.7	22.9	33.3
2	Speaking with other farmers	2.9	0.0	2.9	0.0
3	Speaking with Commission agent/Trader	17.1	16.7	28.6	33.3
4	Speaking with the E-choupal agent	0.0	0.0	0.0	0.0
5	Any other	0.0	0.0	0.0	0.0
6	Two responses	45.7	50.0	37.1	33.3
a	1& 2	5.7	0.0	2.9	0.0
b	1&3	14.3	33.3	20.0	0.0
c	1&4	0.0	0.0	0.0	0.0
d	1&5	0.0	0.0	2.9	0.0
e	2&3	22.9	16.7	8.6	33.3
f	2&4	0.0	0.0	2.9	0.0
g	3&4	2.9	0.0	0.0	0.0
7	Three responses	28.6	16.7	8.6	0.0
a	1,2 & 3	28.6	8.3	5.7	0.0
b	1, 2 & 4	0.0	8.3	0.0	0.0
c	2,3 &4	0.0	0.0	2.9	0.0
B	Time of Price information				
1	At the time of harvest/sale	65.7	75.0	77.1	100.0
2	At the time of sale	34.3	25.0	22.9	0.00
C	Price Information from AGMARKNET				
1	No	100.0	100.0	100.0	100.0
2	Yes	0.0	0.0	0.0	0.0
D	Difference in Price Information				
1	lower than expected	25.7	58.3	51.4	0.0
2	Similar to what expected	62.9	41.7	42.9	100.0
3	Higher than expected	2.9	0.0	2.9	0.0
F	Time of Price Agreement				
1	At the time of sale	85.7	91.7	97.1	100.0
2	By previous agreement	0.0	0.0	0.0	0.0

Source: Field Survey Data.

It can be observed from Table 4.15 that farmers did have information about price prevailing in regulated markets. In case of both crops, the commission agent was also an important source of price information. Further, most often, the farmers were aware of the price soon after harvest. None of the farmers in the sample got information from

AGMARKNET. By and large sample farmers revealed that the price received by them was more or less similar to that expected by them.

4.8 Enforcement Costs:

As discussed earlier, in case of sales in TC, the farmer sells his produce in the APMC through auction method. A commission agent acts between the farmer and the buyer who is normally a trader. Similarly in case of sales under EMC, an agent of the company buys the crop from the farmer at an agreed price. There have however been instances when farmers are cheated by the commission agent while selling in APMC or by the agent of the company in case of EMC. In order to observe this the farmers in our sample were interrogated about their experience with market intermediaries. This transaction cost is indicated in Table 4.16.

Table 4.16: Transaction Cost-Enforcement Costs

Sr. No.	Particulars	(% responses to total)			
		Onion		Pomegranate	
		TMC	EMC	TMC	EMC
A	<i>Difference between agreed price and sale price</i>				
1	Less	25.7	25.0	25.7	0.0
2	Same	68.6	75.0	71.4	100.0
3	A bit more	5.7	0.0	0.0	0.0
B	<i>No. of times went farmer went to agent to get payment</i>				
1	None	71.4	75.0	68.6	100.0
2	Various times	22.9	25.0	22.9	0.0
C	<i>Merchant fulfillment</i>				
1	Bad record	2.9	8.3	8.6	0.0
2	Satisfactory record	71.4	83.3	82.9	33.3
3	Good record	20.0	0.0	5.7	66.7
D	<i>Receipt for sales</i>				
1	No	8.6	0.0	20.0	0.0
2	Yes	88.6	91.7	80.0	100.0
E	<i>Conflict on quality</i>				
1	No	88.6	66.7	85.7	100.0
F	<i>Conflicts any other</i>				
1	Because of Rain	0.0	8.3	0.0	0.0
2	Production rejected	0.0	0.0	2.9	0.0
G	<i>How was it resolved</i>	0.0	0.0	0.0	0.0
1	By APMC/Company Person	0.0	8.3	2.9	0.0
H	<i>Confidence in the merchant</i>				
1	Low	77.1	50.0	60.0	66.7
2	High	8.6	25.0	17.1	0.0

Source: Field Survey Data.

Box 4.5: Retailers in Traditional Marketing Channel

Retail markets are active elements in the food distribution chain and serve the needs of inhabitants of a particular locality. Since they directly serve the ultimate consumer, they are the last link in the marketing chain. Retailers are located near as well as far away from APMC. Retailers noted that in years of bumper crop, their turnover is higher while in years when there is crop failure their purchases are lower. For example, one retailer noted that in 2009 which was a year of good crop, she purchased 10-12 gunny bags of onions (one gunny bag has 50 kg of onions) from a trader in APMC and sold her stock within a week. The stock was purchased for Rs 800/- per quintal and sold for Rs 1100/-per quintal. However, in 2010 there was crop failure and limited arrivals were reaching the APMC. Her purchases therefore reduced to 3-4 gunny bags per week. The stock was purchased at Rs 4000/- per quintal and sold at Rs 5000/- per quintal. Thus due to low turnover, her total income reduced substantially. Further, she narrated that she had to pay Rs 100 per month as fee to the Corporation for space to sell her produce and about 10 per cent of her produce was wasted which was sold at less than half price.

In case of pomegranates, retailers also noted that while pomegranate was sold in 2009 (which was a good year) for Rs 80 per kg, the same was sold in 2010 for Rs 220 per kg due to supply constraint. The retailers explained that they mostly purchased good quality fruit from the traders so that there was minimal loss while sorting and by and large their daily sales are 10 to 15 kg. One particular retailer revealed that once in three days he purchases 30 kg of fruit. The hamali charges from the point of purchase (from trader in APMC) to the tempo is Rs 10 per tray of 30 kg and the transport cost for the tempo from APMC to sale point is Rs 50 per tray. Out of 30 kgs about 1.5 kg is lost during sorting and sold at discount. While keeping the sold stocks, about 1 kg is spoilt as the fruit has a tendency to get punctured. The spoilt fruit is sold at discount or disposed off depending upon the nature of spoilage. He also has to make a payment of Rs 20 per day to a watchman who guards his unsold stocks along with that of other retailers.

Majority of the farmers across both channels and for both crops expressed that they received the same price as was agreed and did not have to go to the agent to receive payment for the produce that was sold and received payment on time. In case of sales of onions in APMC, the onion farmers revealed that the commission agent deducted the price of 2 kgs of onions for every quintal sold on quality and other grounds. This was a uniform practice for every lot sold. However, in most cases for both crops and in both channels, there was no conflict between the farmer and agent on grounds of quality. There were few instances when produce was rejected because of rain.

Although the agent facilitated payment to the farmer and by and large they received timely payment, they expressed low confidence in the merchant. This was mainly because the trader to whom his produce was sold was a close relative or sometimes even the brother of the commission agent. They therefore felt that the agent was biased towards the trader. Some farmers also felt that a few traders controlled the entire market and there was collusion amongst them (see, Box 4.6). They would thus not allow the price to go above a certain level and hence the purpose of sales through auction method was defeated.

The Market Committee was also dominated by traders' interest and the understanding and close personal relations among the traders had given them a monopoly power in the market. The farmer therefore felt that despite market regulation, he was denied a fair price.

4.9 Perception on services provided by different agencies:

Farmers are in need of credit for short term as well as medium to long term for crop loan and other investment purposes. This credit is available to them from formal and informal sources. In Table 4.17 source and purpose of loan is indicated.

Table 4.17: Perception on services provided by different agencies

Sr. No.	Particulars	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
A	Taken any loan (% to selected hh)	57.1	41.7	85.7	33.3
B	Source of loan				
1	Money Lender	5.0	0.0	3.3	0.0
2	Bank	35.0	80.0	46.7	0.0
3	Cooperative	55.0	20.0	46.7	100.0
4	Friends/Relatives	0.0	0.0	3.3	0.0
5	Self Help Group	0.0	0.0	0.0	0.0
6	Buyer of the produce	5.0	0.0	0.0	0.0
7	other	0.0	0.0	0.0	0.0
C	Purpose of loan				
1	Crop Loan (inter-culture operations)	100.0	80.0	100.0	100.0
3	Well digging	0.0	20.0	0.0	0.0
D	Reason for taking loan from buyer				
1	Inter-culture Operation	100.0	0.0	0.0	0.0
E	No. of times loan taken from the buyer in last 5 years				
1	This year only	100.0	0	0	0
F	Total amount of loan obtained from buyer in 2009-10	0	0	0	0
G	Default of loan taken				
1	No	95.0	100.0	83.3	100.0
2	Yes	5.0	0.0	16.7	0.0
H	Source of loan for default loan				
1	Money Lender	0.0	0.0	0.0	0.0
2	Bank	100.0	0.0	60.0	0.0
3	Cooperative	0.0	0.0	40.0	0.0
4	Friends/Relatives	0.0	0.0	0.0	0.0
5	Self Help Group	0.0	0.0	0.0	0.0
6	Buyer of the produce	0.0	0.0	0.0	0.0
7	Other	0.0	0.0	0.0	0.0
I	Reason for default				
1	Less Production	100.0	0.0	100.0	0.0

Source: Field Survey Data.

As expected, all farmers in the sample had taken loan and in case of sample farmers who sold pomegranate through TMC, as much as 85.7 percent of farmers had taken loan. There were only a few cases when farmers had borrowed from moneylenders and it was mostly through banks and cooperative credit societies that loan had been

availed. Further, the main purpose of loan was for crop loan purposes though in a few instances farmers in EMC for onion crop had taken loan for digging wells. In case of EMC, for both crops, there was no default in repayment of loan, but in case of TMC, 5 percent of onion farmers and 16.7 percent of pomegranate farmers who had taken loans had defaulted in repayment. The main reason for default that was cited was crop failure and low production.

Box 4.6: Collusion amongst traders in Satana APMC

A visit to APMC, Satana, Nasik District, revealed that sale of agricultural produce took place through auction method. The spirit of the auction method was that the system of sale is designed to be open and an opportunity is provided to the producers to sell their produce by a method which ensures the possibility of the presence of several buyers and a competitive bidding for every lot sold. Vigorous competition among buyers was to result in higher prices for producers. However, in Satana APMC, some of the sample farmers revealed that the purpose of auction method was defeated as the market functionaries had close personal ties and took advantage of their collective influence and power. The understanding and close personal relations amongst traders had given them monopoly power in the market and hence auction method of sale could not serve its purpose. The farmers revealed that on certain days there were only a few traders who participated in the auction and they had close understanding not to allow the price to go up beyond a certain level, thus leading to near monopsony conditions in the market. There were also cases when the commission agent who organized auctions on behalf of the farmer was actually the brother of the trader to whom the farmer sold his produce.

In view of the above limitations, the purpose of regulated markets which was to ensure free and informed competition was defeated. Such a situation was prevailing in Setana APMC, even after 60 years of market regulation. Besides, farmers complained about undue deductions of produce from every quintal sold, incase of onions as well as poor infrastructure in the market

4.10 Access to Inputs from Buyers:

In agricultural marketing, there is often a linkage between input and output market. The farmer receives input in cash or kind from the market intermediary to whom he sells his produce. Accordingly, our sample farmers were interrogated on inputs received from their buyer. Their response is indicated in Table 4.18.

Table 4.18: Access to Inputs from the Buyer

Sr. No.	Particulars	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
A	Received Input Advance for the reference period (% of responses)				
1	No	100.0	100.0	94.3	100.0
2	Yes	0.0	0.0	5.7	0.0
B	Value of the input (Rs./farmer)	0	0	2571	0
C	Reason for the procuring the input of the Buyer (% of responses)	0	0	0	0
1	Pomo-Oily spot disease	0	0	100	0

Source: Field Survey Data.

It can be observed from Table 4.18 that only 5.7 percent of farmers under TMC for pomegranates received input advance from the commission agent. In other words, from our sample of 35 farmers, only 2 farmers accessed inputs from the agent. The input received was mainly fertilizer and pesticide and on an average the value of input received per farmer was Rs 2571/-. As mentioned earlier, only 2 farmers availed of this facility and the amount taken by each of these farmers from the agent was Rs 45000/- . Since 33 farmers in the sample had not availed of inputs from the agent, the average is only Rs 2571/- per farmer. The main reason for taking fertilizer and pesticide from the agent was to use this input to prevent oily spot disease which has a tendency to destroy the entire pomegranate crop.

4.11 Perception of the Market Infrastructure:

It was discussed earlier that in order to improve the marketing of farm products, wholesale agricultural markets began to be regulated soon after independence. The APMCs were established by state government with a view to regulate the marketing of agricultural produce in market areas. The main purpose of regulated markets was to ensure free and competitive sales by auction methods. Regulated markets were to also ensure standardized market charges, reliable weighing, payment of cash to farmers without undue deductions, and several other amenities in market yards. The APMCs had monopoly power as no person could carry out trade in agricultural produce without license of the APMC. Keeping in view the restrictions faced by farmers in selling to APMC, amendments were made in APMC act, to allow direct marketing, contract farming, corporate entry, etc. Accordingly, in Table 4.19 the facilities available in the APMC of Satana taluka, Nashik district and market infrastructure as perceived by farmers is indicated.

Village roads are an important infrastructure to shorten the distance between the point of production and sale. Good roads also enable the produce to reach the point of sale without much damage to the produce. Majority of farmers in TMC, for both crops expressed that the village roads were average or good quality. Less than 10 percent of farmers indicated that the roads were bad. With respect to proximity to the market, it was observed that the APMC was not in the same village and in a few cases the farmers in the sample had to travel within 10 kms to access the regulated market. In case of pomegranate farmers 65 percent of respondents expressed that they had to travel between 10 and 25

kms to reach the APMC and there were also instances when farmers had to travel more than 50 kms to access the market. With respect to godown and cold storage facilities, majority of farmers revealed that these facilities were poor but other facilities such as auction, supervision of sale, loading, sorting, weighing were either satisfactory or good. They also opined that internal telephone facility, computer facilities and banking facilities were average quality.

Table 4.19: Perception of the Market Infrastructure

Sr. No.	Particulars	% to total selected hh			
		Onion		Pomegranate	
		TMC	EMC	TMC	EMC
1	Condition of the road to market				
a	Bad	8.57	8.33	8.57	0.00
b	Average	45.71	66.67	45.71	66.67
c	Good	45.71	25.00	45.71	33.33
2	Proximity of market				
a	Within the village	0.00	0.00	0.00	0.00
b	within 10 kms	11.43	16.67	0.00	33.33
c	between 10 & 25kms	37.14	41.67	65.71	66.67
d	>25 kms & <50 kms	14.29	16.67	20.00	0.00
e	more than 50 kms	37.14	25.00	14.29	0.00
3	Go-down facilities				
a	Not Available	68.57	75.00	80.00	100.00
b	Bad	0.00	0.00	2.86	0.00
c	Average	0.00	8.33	11.43	0.00
d	Good	2.86	16.67	5.71	0.00
4	Cold storage				
a	NA	88.57	100.00	82.86	100.00
b	Bad	5.71	0.00	5.71	0.00
c	Average	2.86	0.00	8.57	0.00
d	Good	2.86	0.00	2.86	0.00
5	Auction arrangements (Open)				
a	Bad	17.14	0.00	17.14	33.33
b	Average	42.86	66.67	65.71	66.67
c	Good	40.00	33.33	17.14	0.00
6	Supervision of sale				
a	Bad	0.00	8.33	11.43	0.00
b	Average	54.29	75.00	62.86	66.67
c	Good	45.71	16.67	25.71	33.33
7	Loading facilities				
a	Bad	20.00	0.00	11.43	0.00
b	Average	37.14	91.67	65.71	66.67
c	Good	42.86	8.33	22.86	33.33
8	Sorting facilities				
a	Bad	11.43	25.00	25.71	0.00
b	Average	45.71	58.33	62.86	100.00
c	Good	5.71	8.33	11.43	0.00
d	NA	37.14	8.33	0.00	0.00

Table 4.19 continues....

Sr. No.	Particulars	% to total selected hh			
		Onion		Pomegranate	
		TMC	EMC	TMC	EMC
9	Weighing facilities				
a	Bad	17.14	16.67	2.86	0.00
b	Average	34.29	25.00	42.86	66.67
c	Good	48.57	58.33	54.29	33.33
10	Packing facilities				
a	Bad	25.71	0.00	11.43	0.00
b	Average	48.57	75.00	71.43	100.00
c	Good	25.71	25.00	17.14	0.00
11	Internal Telephone				
a	Bad	25.71	50.00	37.14	66.67
b	Average	65.71	33.33	60.00	33.33
c	Good	8.57	16.67	2.86	0.00
12	Banking facilities				
a	Bad	5.71	16.67	31.43	33.33
b	Average	57.14	33.33	37.14	66.67
c	Good	37.14	50.00	31.43	0.00
13	Computer facilities				
a	Bad	5.71	16.67	11.43	0.00
b	Average	45.71	25.00	60.00	33.33
c	Good	37.14	50.00	20.00	33.33
d	NA	11.43	8.33	8.57	33.33

Source: Field Survey Data.

Thus with respect to certain market facilities majority farmers were satisfied, but at the same time there were also certain shortcomings and farmers felt the need to improve infrastructure.

4.12 Perception of the Farmer on Other Market Agents and Price:

In agricultural marketing, as we know, the farmer sells his produce in regulated markets through auction sales to a trader and a commission agent facilitates the transaction. The commission agent ensures that timely payment is made to farmers for the auction price. Once the farmer receives his payment, his marketing operations normally come to an end. However, it was felt necessary to find out whether the farmer after completing his sales transaction, still has information about the supply chain of the commodity, the prices prevailing in secondary and terminal markets, etc. Accordingly, the farmers in our sample were questioned on their awareness about other market intermediaries operating in agricultural markets, other wholesale markets where the produce is sold, retail price, role of government, etc. Their responses are summarized in Table 4.20.

Table 4.20: Perception of the Farmer on other Market Intermediaries, Price Spread and Constraints in Agricultural Marketing

Sr. No.	Particulars	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
1	After the Buyer, who are the agents and how many channels are there between you and the retail market (% to Total)				
A	<i>Agents</i>				
a	Don't Know	51.4	100.0	51.4	100.0
b	Agent/Trader/Wholesaler/Retailer	8.6	0.0	20.0	0.0
c	Agent/APMC Agent	34.3	0.0	14.3	0.0
d	Trader	5.7	0.0	0.0	0.0
e	Traders and Others	0.0	0.0	14.3	0.0
B	<i>How many channels in between (% to total responses)</i>				
a	1 Channel	70.59	0	29.41	0
b	2 Channels	11.76	0	29.41	0
c	3-4 Channels	17.65	0	41.18	0
2	Which are the wholesale markets in country where crop is sold (% to Total responses)				
a	Calcutta	5.7	3.7	32.8	33.3
b	Ahmadabad	8.6	3.7	6.0	33.3
c	Nashik	11.4	11.1	4.5	0.0
d	Surat	15.7	22.2	6.0	0.0
e	Pimplgaon	11.4	14.8	0.0	0.0
f	Mumbai	17.1	18.5	6.0	0.0
g	Lasalgaon	14.3	14.8	0.0	0.0
h	Delhi	7.1	7.4	37.3	33.3
i	Other	8.6	3.7	7.5	0.0
3	Did you know the price at which produce is sold in the retail market (% to Total hh)				
a	Unaware	42.9	33.3	48.6	33.3
b	Aware	57.1	66.7	51.4	66.7
c	If you know, what is the price (Rs/qtls)	1406	1029	7000	7000
4	What is the margin that buyer of your produce earns from the sale of the produce (Rs/qtls)	447	391	2984	2000
5	What is your opinion of margin that is realized (% to total hh)				
a	High	68.6	75.0	34.3	33.3
b	Very High	14.3	16.7	20.0	0.0
c	Do Not know	17.1	8.3	45.7	66.7
6	In future will you sell the produce to this agent again (% to total hh)				
a	No	40.0	16.7	37.1	33.3
b	Yes	51.4	66.7	42.9	66.7
c	Uncertain	8.6	0.0	8.6	0.0
d	If give higher price	0.0	16.7	11.4	0.0
7	Any other option for selling the produce (% to total hh)				
a	No	54.3	16.7	54.3	0.0
b	Yes	45.7	83.3	45.7	100.0
c	If yes, what are the options for selling (% to total responses)				
i	City Trader	31.3	0.0	12.5	66.7
ii	Export	25.0	10.0	68.8	0.0
iii	Other Market/State	37.5	90.0	12.5	33.3
iv	Govt. if given higher price	6.3	0.0	6.3	0.0

Table 4.18 continues...

Sr. No.	Particulars	Onion		Pomegranate	
		TMC	EMC	TMC	EMC
8	What are the enabling conditions and support that Government should do so that farmers can get a better price for the produce (% to total responses)	100	100	100	100
a	Need Export Facility	14.8	9.1	28.0	0.0
b	Cold Storage & Higher MSP	3.7	9.1	0.0	0.0
c	Need Subsidy	3.7	9.1	0.0	0.0
d	Market and Other charges Should be reduced	3.7	0.0	0.0	0.0
e	Increase MSP	63.0	45.5	40.0	0.0
f	Reduce Commission Agent	7.4	18.2	8.0	100.0
g	Other Facilities	3.7	9.1	24.0	0.0
9	What are the Constraints faced by you in EMC As compare to TC (% to total responses)	-	100	-	100
a	Only Buys Selected Quality produce	-	45.5	-	55.0
b	Buys only in small Quantity	-	9.1	-	0.0
c	Delay in Payment	-	9.1	-	0.0
d	Buys from Trader and not from farmers	-	9.1	-	0.0
e	No Problem	-	0.0	-	0.0
f	Low rate of produce	-	0.0	-	0.0
g	EMC is not as strong as TC	-	0.0	-	45.0
h	Other Problems		27.3		0.0
10	How do you think the constraints in the Emerging marketing channels can be overcome?	--	100	--	100
a	Reduce the purchase from agent	-	40.0	-	0.0
b	Purchase entire produce	-	60.0	-	100.0
c	Need to Attract farmers by providing facilities and services	-	0.0	-	0.0
d	Increase rate -Emerging Market	-	0.0	-	0.0
e	Other Previsions	-	80.0	-	0.0
11	Suggestions to ensure that farmers get higher price for the produce and the margins of the intermediaries are reduced?	100	100	100	100
a	Govt. should help to export	10.3	0.0	24.1	60.0
b	Reduce Intermediaries in market	27.6	30.0	6.9	0.0
c	Provide good Transport Facilities	6.9	0.0	0.0	0.0
d	Good Market Facilities	3.4	20.0	10.3	0.0
e	Price Should be decided by Government during bumper harvest	10.3	30.0	10.3	40.0
f	Reduce Charges (market/processing)	6.9	0.0	6.9	0.0
g	Provide Credit facilities	3.4	0.0	13.8	0.0
h	Reduce Electricity Charges	3.4	0.0	3.4	0.0
i	Government should purchase	0.0	10.0	3.4	0.0
j	All Produce should be purchased by Merchants	0.0	0.0	0.0	0.0
k	Other	27.6	10.0	20.7	0.0

Source: Field Survey Data.

It can be observed from Table 4.20 that after sale of his produce, the farmers were by and large unaware of the supply chain that existed till the produce reached the ultimate consumer. A personal interview with large number of farmers in APMC, Satana, revealed that farmers were not interested in knowing how their produce changed hands and reached the retail market. They were only concerned with the price which they received and their sale receipts. Infact, in case of EMC, none of the farmers in the sample had any awareness about further sale of their produce. However, some farmers in the sample revealed that they were aware that their produce went to another commission agent or trader. In case of TMC for onion, 70.59 of the sample farmers opined that there was only one channel while in case of pomegranates 41.18 percent of farmers felt that their produce goes through 3 to 4 channels. The sample farmers were also aware of the other wholesale markets where their crop is sold both within and outside the state. About 43 percent of sample farmers in TMC and 33 percent in EMC for onion were not aware of retail price while the same for pomegranate was 48.6 percent and 33 percent respectively. Other farmers in the sample were however aware of the price.

Farmers also felt that the margin realized by the buyer of their produce is high. In case of EMC, for both crops, 66.7 percent of farmers in the sample indicated that they would continue to sell in the same channel while in case of TMC, for onion the percentage of farmers was 51.4 percent and for pomegranate it was 43 percent. Sample farmers also indicated other options such as export markets or even to government where they would like to sell their produce. In order to obtain higher price for their produce, farmers felt that exports of their produce should be promoted, cold storage should be provided and subsidies should also be extended. In case of onions especially, farmers felt that when onion prices are high, in order to meet the requirements of consumers, the government imposes a ban on exports. Thus farmers are unable to take advantage of the high international prices. Firstly they suffer from crop failure, and then they are unable to take advantage of higher prices in international markets. Thus farmers noted that at times government policies such as ban on exports cause hardships to them. Also, in years of bumper crop when prices crash, the government machinery is often slow in mopping up the produce.

The farmers selling to EMC were questioned about constraints faced by them while selling through this channel. The main constraint that onion farmers opined was that EMC buys only selected quality produce of specific size, shape and color. However, in APMC all produce is sold. Therefore sales through EMC lead to marketing constraints.

The farmers also explained that since only quality produce is picked up by EMC, the balance produce is treated as low quality and sold at a lower price. Therefore in some cases the overall average price for their entire produce does not fetch them much higher returns as compared to sale through TMC. Further, some farmers felt that in EMC, the agents of the company who buy their produce purchase only small lots and also delay payment. With respect to pomegranate, farmers felt that EMC is still at an early stage and not on a strong foundation. Farmers expressed their view that constraints can be overcome if EMC purchases their entire produce.

Box 4.7: Preference of consumers on Retail Outlets

Organized retail in fruits and vegetable segment is still at a very infant stage in India. However, in the recent past with the amendment of APMC act, several Indian companies have entered into organized retailing of fresh fruits and vegetables and now sale of fruits and vegetables in super markets is gradually becoming popular. The main driving force promoting expansion of these supermarkets is the increase in per capita incomes, urbanization and rising participation of women in labour force. Despite supermarkets expanding their net work of marketing operations, sales through kirana shops, pushcarts, and other retailers are still predominant.

Customers mainly from upper middle and high income categories prefer supermarkets because there are several potential benefits associated with purchasing from these markets. Supermarkets are a self service store offering a wide variety of fresh produce and therefore add to the convenience of the customer. The basic appeal to a supermarket is also the availability of products at competitive prices and the stores being open till late hours so that customers can easily access these markets. Supermarkets also advertise their products in newspapers as well as in pamphlets so that customers are aware of the prices and discount offers. Consumers also prefer supermarkets because fruits and vegetables are sorted, graded, labeled and well packed. Further, produce which is organically grown and hence free from pesticides is also available and such produce meets the demand for consumers concerned with “food safety”. Some consumers feel that supermarkets comply with all standards which suit their requirements and they can also make payment through credit card and facility is available to park their vehicles. Such factors were the main reasons for consumers purchasing fruits and vegetables from these markets rather than the traditional retail outlets.

However, not all consumers prefer to go to supermarkets. They prefer to buy from their “Mom and Pop” shops or a retail outlet near their residence. After one or two visits to a supermarket they reject the concept of quality that supermarkets emphasise upon and they feel that the fruits and vegetables are not farm fresh but have been refrigerated and stored for long period of time. Conversely, the produce available in a retail outlet or local “mandi” appears fresher and has not been put through any processing. Since the retailers handle limited produce, they replenish their stocks daily, and these markets also hold an important advantage in terms of price and quality.

The farmers were asked for their suggestions which would ensure them higher prices and also which would reduce marketing margins of the intermediaries. Farmers made several suggestions such as exports should be promoted and encouraged especially when global prices are ruling high, market charges and number of intermediaries should be reduced and credit should be easily available. Government intervention can also help to push up prices.

4.13 Marketing of Onions in Satana APMC:

Besides collecting data from sample farmers on quantity sold in APMC and price received, data on total arrivals of produce and average price received was also collected for every month of the rabi marketing season. The details are indicated in Table 4.21 and Fig 4.1.

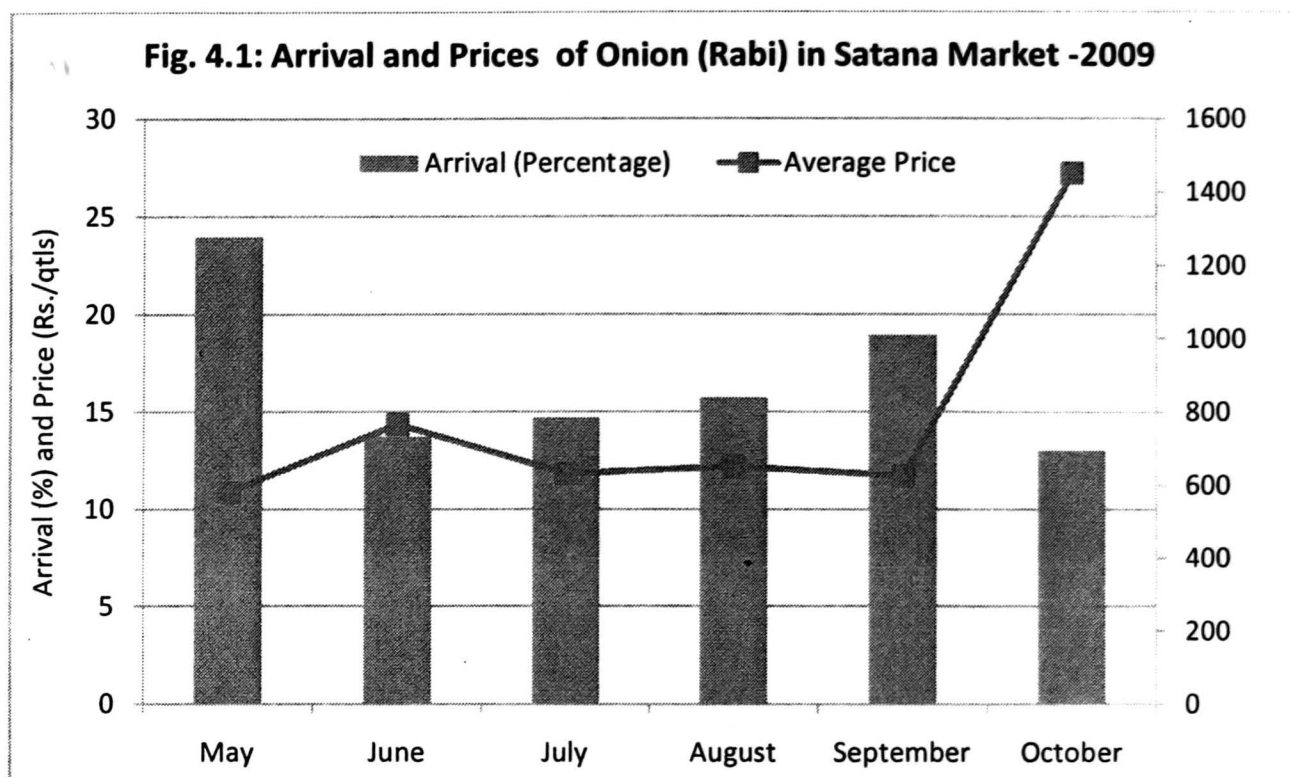
Table 4.21: Marketing of Rabi Onion in APMC, Satana (2009)

Month/Year (2009)	Arrival (Percentage)	Average Price
May	24	580
June	13.7	765
July	14.7	630
August	15.7	650
September	18.9	625
October	13.0	1450

Source; APMC, Satana (Nashik District)

It can be observed from Table 4.19 that prices are lowest in the regulated market in the month of May (which is the harvest season) when sales (arrivals) are highest. This obviously indicates the urgent need of cash of farmers to meet their financial obligations. The arrivals in the market reduced in the following months indicating that farmers are storing the produce and gradually selling it depending upon the price, deterioration in quality and price ruling in the market. In the month of October which is the lean period (kharif crop arrives in the market in November), it is observed that the price is 2.5 times that in the peak period (May). Hence, even if we assume that from the month of May to October, there is storage loss of 30 percent of the produce, the farmer still earns about 1.75 times the amount that he could earn during sales in peak period. If storage costs are included (most farmers have their own onion chawls and government also makes provision for the same), the returns are marginally reduced. Further, the produce that is

deteriorated is often sold to hotels at lower prices. This observation was also made by us during the field survey to several onion farms. Farmers unanimously stated that they avoided selling their produce in May when prices are very low and as far as possible stored their produce to gain advantage of lean season prices.



In case of pomegranate however, the picture of marketing is quite different. Pomegranate is available almost throughout the year and with the adoption of bahar treatment the harvest can be adjusted to the demand. The arrival pattern of pomegranate is indicated below (Table 4.22):

Table 4.22: Details of arrival pattern of pomegranate according to bahar treatment

Bahar	Flowering Time	Period of Harvest
Mrig	June-August	November-March
Hasta	October-November	February-May
Ambe	January - February	June- August

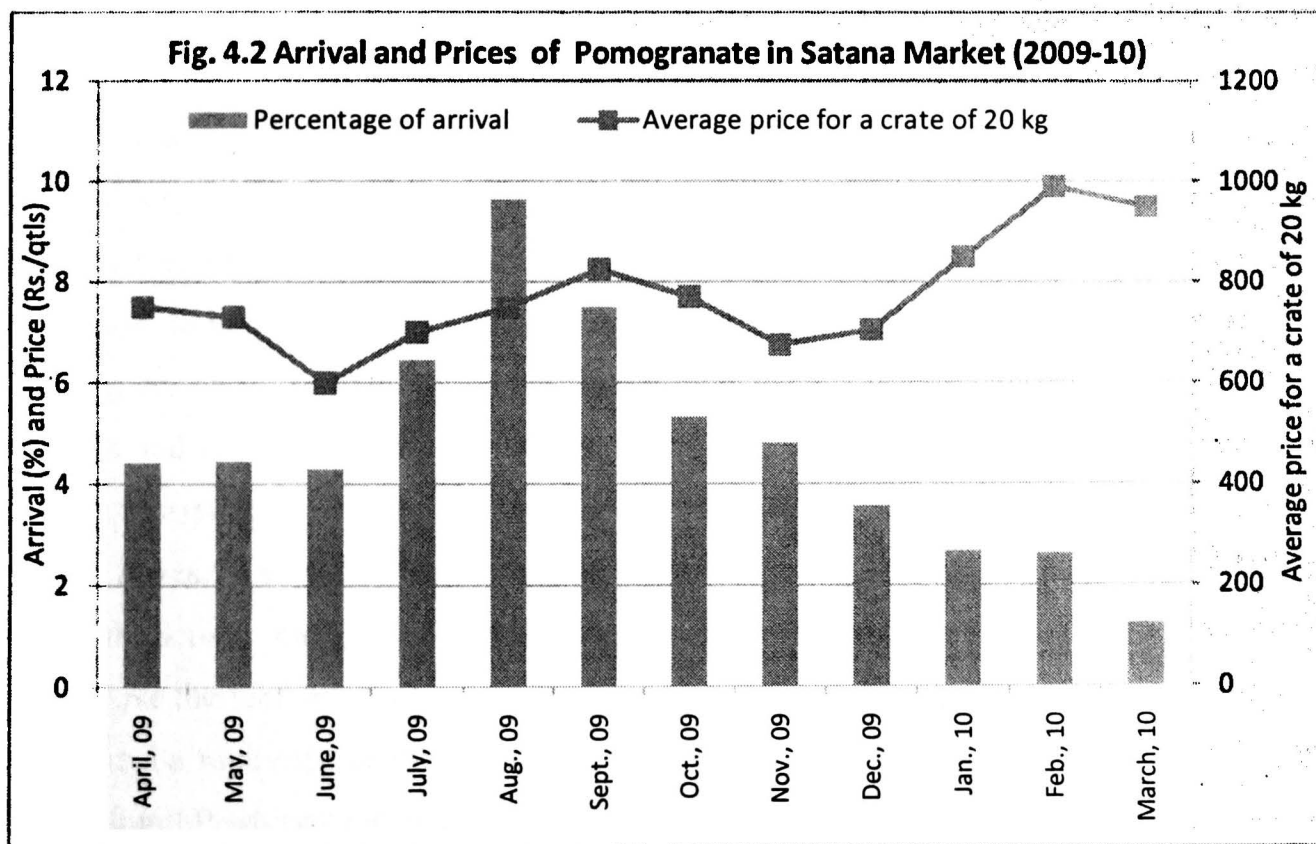
Source : Field Survey

From the above it is observed that pomegranate has three bahars and the supply can be adjusted according to demand. Further, this crop does not enter the consumption basket of every person. The arrival pattern and the average price for pomegranate in APMC, Satana is indicated in Table 4.23 and Fig.4.2.

Table 4.23 Percentage of Arrival (Pomegranate) in 2009-10 in APMC, Satana and Average Price

Month	Percentage of arrival	Average price for a crate of 20 kg
April 2009	4.43	750
May 2009	4.44	730
June 2009	4.30	600
July 2009	6.45	700
August 2009	9.63	750
September 2009	7.50	825
October 2009	5.33	770
November 2009	4.82	675
December 2009	3.58	705
January 2010	2.67	850
February 2010	2.63	990
March 2010	1.25	950

Source; APMC, Satana.



From the records of APMC, Satana, it was observed that in 2009-10, about 924403 crates of 20 kgs each arrived in the market. It is observed from Table 4.21 that maximum arrivals in the market were in August and followed by September. The price of pomegranate also depends upon the quality and variety and hence there is always not an inverse relation between arrivals and price.

Overall, in this chapter marketing costs and margins as well as availability of marketing infrastructure was observed in both TMC and EMC. While farmers have benefitted in case of sales through EMC, their demand is limited and restricted to quality produce. However, as organized retail gathers momentum, farmers may benefit from selling through this channel. This channel can then also serve as a competitor for sales through regulated market which will motivate APMC to upgrade its infrastructure.

Chapter 5

Summary, Conclusions and Policy Implications

5.1 Backdrop:

Food security and achievement of self sufficiency in food has always been accorded high priority in the food policy of India. Before and soon after independence, when India was facing severe food shortage, a major breakthrough came about in technology. The Green Revolution in the late 1960s and early 1970s signaled the beginning of a more dynamic agriculture and therefore helped to overcome productivity and production stagnation. Thus, the country became self sufficient in food grains production and dependence on imports reduced. After self sufficiency in food grains was met, the policy makers realized the need for diversification of agriculture to achieve higher growth rates as well as to adjust to the changing consumption pattern of the population which was experiencing urbanization and rising per capita incomes. Thus dairy, horticulture, poultry and other allied sectors were given impetus and are being promoted through various policy measures. This increased production has brought in its wake new challenges to handle in terms of huge marketable surplus. Attention is also being drawn on building up of an efficient marketing system which includes adequate physical facilities for safe and economic handling of produce as well as institutional and legal support for orderly transactions.

As early as 1928, the Royal Commission on Agriculture highlighted the defects and malpractices that existed in the marketing of agricultural produce. Therefore, in order to improve the marketing system of farm products, wholesale agricultural produce markets began to be regulated in the 1950s and 1960s, when each state began implementing its Agricultural Produce Marketing Committee (APMC) Act. The APMCs were established in each state by the respective state governments with a view to regulate the marketing of agricultural produce in market areas.

Despite certain benefits, market legislation had several other limitations. The provisions of the APMC Act were not compatible with free and competitive market structure sought by the government and often there was collusion amongst traders which frustrated the very purpose of the act. In view of the above inherent bottlenecks in the

APMC Act and also new challenges and opportunities associated with agricultural marketing, across all states, the Government of India (GOI) felt it was necessary to undertake market reforms through a change in market legislation. An Expert Committee on “Strengthening and developing Agricultural Marketing” under the chairmanship of Shri Shaknerlal Guru was appointed by GOI in December 2000. This committee (Guru Committee) reviewed the entire system of marketing of agricultural commodities and submitted its recommendations to the government in June 2001 and recommended requirement of a vibrant and dynamic marketing structure and system to meet the challenges emerging out of globalization in the post WTO period. An Inter-Ministerial Committee (chairman: Shri R.C.A. Jain, Additional Secretary, Ministry of Agriculture) was set up to examine the report and the legislative changes required for the implementation of this report. The Inter-Ministerial Task force recommended the formulation of a Model APMC Act which would improve the efficiency of the marketing system and encourage private sector investment in agricultural marketing.

In view of the changes made in APMC Act, direct marketing, contract farming, corporate entry into agricultural markets etc. have begun to make inroads into agricultural marketing. Keeping this in mind, it is necessary to observe the role of emerging marketing channels in agriculture and benefits to producers and consumers. Accordingly a study entitled “Impact of Emerging Marketing Channels in Agriculture Marketing-Benefit to Producers-Sellers and Marketing Costs and Margins of Major Agricultural Commodities” was sponsored by Ministry of Agriculture, Government of India. The present study is an attempt to compare the benefits and constraints for agents trading in the traditional marketing channel (TMC) and emerging marketing channel (EMC). In TMC sale takes place through auction method in regulated markets whereas in EMC private players have an opportunity to organize procurement networks at regional and national level and also accommodate logistics such as direct purchases from farmers, transport, storage, cleaning, sorting and grading. The study is undertaken for the state of Maharashtra (Nashik district) for two horticultural crops, namely onion and pomegranate.

5.2 Objectives of the Study:

The “emerging” marketing channels are supposed to reduce transaction costs and ensure that high margins maintained by intermediaries in the supply chain are reduced so that the farmer benefits and gets a better price as compared to sale in regulated markets. Keeping this in mind the study has the following objectives:

1. To analyze the share of the farmer in the final consumer’s rupee in an emerging marketing model vis-à-vis the traditional marketing channel;
2. To analyze the degree of market efficiency and incidence of post harvest losses in emerging marketing channel vis-à-vis traditional marketing channel;
3. To note the market practices and services of agencies involved in the emerging channel and observe if they are superior to that of traditional channels;
4. To analyze the constraints faced by farmers and different market functionaries in the emerging marketing channel as compared to the traditional marketing channel.

Deepak Fertilisers and Petro Chemicals Corporation Limited (DFPCL) was chosen as a case study to observe the emerging channel and compare it with traditional channel. DFPCL entered into agricultural markets with the purpose of providing cost effective technology to farmers so as to produce quality fruit. It also procures for domestic as well as overseas markets.

5.3 Methodology:

The study dealt with two horticultural crops namely pomegranate (fruit) and onion (vegetable) for the state of Maharashtra. The study is based on both Primary and Secondary data.

In order to observe the supply chain of the emerging channel and traditional channel, primary data was collected from farmers, market intermediaries, retailers, consumers and market Committee members, to whom a detailed questionnaire was addressed:

The sample size for the survey of farmers was as follows:

Crop	Traditional Marketing Channel	Emerging Marketing Channel
Onion	35	12
Pomegranate	35	05

The sample size for other agents such as intermediaries (traders), retailers and consumers was 5 in TMC as well as EMC for onion and pomegranate.

A focus group discussion with the Committee members of APMC was also held in order to get a clear picture of market charges, market practices, etc. Primary data for both crops is collected from Satana taluka of Nashik district.

Tabulation of the data was done by using simple statistical tools to observe the share of farmer in terminal price in case of both traditional and emerging channel. The post harvest losses, market practices and constraints faced were also observed using field level data. The Modified Measure of Marketing Efficiency (MME) (Acharya's Method) was calculated using the formula:

$MME = FP / (MC + MM)$, where FP is price received by farmer, MC and MM are marketing costs and marketing margins respectively.

Secondary data is also used to support our analysis and is collected from various government reports and websites.

5.4 Features of TMC and EMC:

While TMC provided APMCs with almost monopoly in agricultural marketing, in EMC, provision was made for alternative marketing channels.

5.4.1 Features of TMC:

The state of Maharashtra enacted the Maharashtra Agricultural Produce Marketing (Regulation) Act in 1963. The main feature of regulated markets was that the system of sale is designed to be open and an opportunity is provided to the producers to sell their produce by a method which ensures the possibility of the presence of several buyers and a competitive bidding for every lot sold. Thus vigorous competition among buyers results in

higher prices for producers. Further, the net returns to the cultivators would also be increased by market regulation eliminating superfluous charges and minimizing the various costs of handling. This practice would protect farmers from exploitation by middlemen and get competitive prices. The regulated markets are designed to ensure that the various market charges are fixed, correct weighing of produce is assured and arrangement is made for the settlement of disputes. Grading of agricultural produce was also introduced in the regulated markets to enable the farmers to get the benefit of it.

The main market functionaries in regulated markets are the commission agents, traders, brokers, processors, weighmen, helpers and *hamals*, who must hold a license from APMC to operate in the mandi. The market fees range from 0.75 percent to 1 percent of the value of produce sold. Agricultural Produce Market Committees are constituted for each regulated market and comprised of farmers, traders and other market functionaries who are responsible for day-to-day management of the market. They control and regulate admissions to the market, issue and renew trader licenses, and suspend or cancel them. The members of the APMC are elected by members of agricultural credit societies and other cooperative societies and by village panchayats within the area. The APMCs are supervised by the Maharashtra State Agricultural Marketing Board (MSAMB).

5.4.2 Features of EMC:

As noted earlier, all states were required to amend their APMC Act, which had to be based on the Model Act, circulated by GOI to the states. Accordingly, the state of Maharashtra followed suit and made suitable amendments in the Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963. The Act was amended in June 2006 and rules were framed in June 2007. When the APMC Act was framed in 1963, the focus was on regulation of marketing but in the amended Act, the concept of development was also introduced. The title of the amended Act is “Maharashtra Agricultural Produce Marketing (Development and Regulation) (Amendment) Act, 2006”.

As per amendment of the Act, provision is made for Private Markets, Farmer-Consumer markets and Direct Marketing and in order to set up such markets license is to be obtained from the Director of Agricultural Marketing. The government can also declare certain markets as Special Commodity markets on the basis of arrivals, turnover, and geographical area. These Special Commodity markets are to have modern

infrastructure and storage facilities as per the requirement of the agricultural produce. The Act also makes provision for contract farming.

After amendment, the following reforms were observed :

- Direct marketing - 72 Licenses issued
- Private markets - 07 approvals given
- Farmer-Consumer Markets - 33 locations
- Contract farming – 1 lakh hectares under various crops
- Single License System – 09 Private players
- Special Commodity markets – 20 Festivals organized

Thus from the above it can be observed that amendments have been made in Maharashtra APMC Act, 1963, according to which private players were allowed to open and operate in agricultural markets, where farmers could sell their produce. There was no compulsion for farmers to bring their produce to the market yard and APMC no longer had monopoly in marketing operations.

5.5 Major Findings of the Study:

The following are the major findings of the study:

1. The price spread and marketing costs and margins for onion can be observed from Table 5.1. It can be observed from table that in TMC although the farmers in the sample received Rs 711/- per quintal, they had to incur marketing costs of Rs 74.94/- per quintal and hence their net price after deducting marketing costs was Rs 636.06/- per quintal. (It may be noted that Rs 711/- per quintal is the weighted average price of the sample farmers which is calculated by using quantity sold as weights). The farmers sold to wholesalers who incurred marketing costs and margins of Rs 445.05/- per quintal. There was also wastage of onions during the time taken to transport the produce from the APMC to the retail outlets. The sale price of the onion retailer was Rs 1437.65 /- per quintal. Finally, it was observed that the share of the farmer in the retailer's price under TMC was 44.24 percent, while marketing costs as a percentage of retailer's price was 44.25 and marketing margins as percentage of retailer's price was 11.05 percent.

Table 5.1: Price Spread and Marketing Costs for Onion (2009) Rs per quintal

Price Spread	TMC	EMC
I Price received by farmer	711	694
II Total Marketing costs of farmer	74.94	-
(a) transport to APMC	23	-
(b) loading & unloading	2	-
(c) weighing & other related expenses	7.30	-
(d) commission	28.44	-
(e) standard deduction considered as wastage	14.2	-
Net Price received by farmer	636.06	694
III Marketing Costs and margins of wholesaler	445.05	-
(a) market fee	3.32	-
(b) gunny bags	32	-
(c) stitching gunny bag	3	-
(d) hamali	6	-
(e) wastage during transport	284.4	-
(f) transport to terminal market	95	-
(g) wholesaler's margin	21.33	-
Purchase price of wholesaler plus marketing costs & margins	1156.05	-
IV Marketing cost and margins of Retailer	281.6	906
(a) Hamali from point of purchase to tempo	10	2
(b) Transport to retail outlet	10	12
(c) Miscellaneous expenses such as cess to corporation, watchman for unsold stock, supermarket overheads, etc	2	103
(d) Wastage	115.60	70.5
(e) Retailer's margin	144	718.5
(b) sale price of retailer	1437.65	1600
V Share of farmer (%) in retailer's price	44.24	43.4
VI Marketing Costs as % of retailer's price	44.25	11.7
VII Marketing margins as % of retailer's price	11.05	44.9
VIII Modified Measure of Marketing Efficiency	0.87	0.77

Source: computed from field data

With respect to sales through EMC, it was observed that although the sample farmers received a lower price than the auction price in TMC, they did not have to incur marketing costs as their produce was picked up by the agent of the company from the farmer's field. Hence Rs 694/- was the net price received by the farmers under EMC which was about 9 percent higher than the price received by farmers who sold through TMC. The auction price in TMC was higher because sample farmers did not sell their entire produce immediately in post harvest glut,

but took advantage of lean season rise in price. In EMC farmers sold soon after harvest to the agent of the company. In EMC, from the farmers' field, the produce goes to retail outlets such as malls or in some cases it is exported. The margin of the retailer in EMC was obviously much higher than that observed in TMC and was 44.9 percent. It may be noted here that the retailer's margin includes the margin of DFPCL which purchases the produce from farmers and supplies it to the retail outlet. About 42 percent of retailer's margin was the share of DFPCL for its service charges. The share of the farmer in retailer's price under EMC was 43.4 percent which is negligibly lower than those who sold under TMC. The marketing channel under EMC was much shorter than that under TMC. The wholesalers are eliminated under EMC and retailer's margin is higher. The retail price under EMC was also higher than under TMC because the agent of the company who buys the produce, normally does sorting of the produce and buys only selected produce. Hence as produce is of better quality in EMC, the retail price was also higher.

2. In Table 5.2 the price spread and marketing costs of pomegranate are indicated. In case of sales through TMC, it was observed that sample farmers had to incur marketing costs of Rs 330/- per quintal, and hence the farmers' net price was Rs 3489/- per quintal which was reduced by 9 percent from auction price. In case of pomegranates and other fruits, the commission charges to be paid to the agent is 8 percent which is double that for other agricultural commodities. This was mainly because the risk is higher in case of fruits. Discussion with commission agents in APMC, Satana revealed that the commission agent passes on 2 percent of his commission to the wholesaler who buys the produce from the farmer which serves as a discount given for bulk purchase. Thus per quintal, the farmers had to bear commission charges of Rs 305/- .The market fee was borne by wholesalers which is used for the development of APMC. The purchase price of the wholesaler including marketing costs and margins was Rs 5500/- per quintal. When the produce reaches the retailer, marketing costs and margins to the tune of Rs 2000/- were incurred. The sale price of the retailer was Rs 7500/- per quintal. Overall, in TMC it can be observed that the share of farmer in retailer's price was 46.5 percent, marketing costs as percentage of retail price was 20.43 and marketing margins as percentage of retail price was 33.

With respect to sales through EMC, it was observed that the net price received by sample farmers was Rs 6100/- per quintal which was 75 percent higher than TMC. This huge difference in price received by farmers who sold through EMC was largely explained by two reasons. First of all, the produce purchased by the agents of EMC is very limited and of very superior quality. The weight of the fruit purchased by them was at least 200 gms, free of defects and the general appearance was good. Further, since it was picked up from their field, the farmer does not have to bear transport or any marketing costs. In contrast, in case of sales through TMC, all produce irrespective of quality was sold through auction. Low quality produce was auctioned at a very low price, while better quality produce fetched a higher price. The price ranged from Rs 107/- for 20 kg for very low quality produce to Rs 750 /- for 20 kg for good quality produce in 2009. Again, when the farmers took their produce to the APMC, they incurred marketing costs. In case of fruits, the commission charges paid by the farmer were double that of other commodities as the risk is higher. Hence, due to these reasons, the farmers who sold through EMC received much higher prices than those who sold through TMC. In EMC the produce from the farmer's field reaches the retail outlet and the role of wholesalers is eliminated. The retail price for pomegranates under EMC was Rs 8500/- per quintal. The share of farmer in retailer's price was as high as 71.76 percent which was much higher than that under TMC (46.5 percent). Since the supply chain was also shorter in EMC, the marketing costs were only 3.36 percent of retail price. In TMC however, there were cases when there were two wholesalers – one wholesaler was from the local market who participated in the auction and then transported the produce to another wholesaler in a distant market. Thus more intermediaries obviously increased the mark-up at each level, thereby increasing marketing costs and margins. However, this is bound to happen in case of commodities which are produced in a particular region but demand is throughout the country. For example about 70 percent production of pomegranate is in Maharashtra but demand for pomegranates is also in Delhi, Lucknow, Agra and other areas where the crop is not cultivated. This increases marketing costs and margins.

It was noted that wastage in EMC was much lower than that in TMC. This is obvious, because under EMC, only selected fruits were purchased which have minimal or no defect. The retailer's margins were higher in EMC as compared to TMC and while retailer's margin was Rs 1186/- in TMC, the margin was Rs 2114/- under EMC which meant that retail margin was about 1.8 times that of TMC. It may be noted that from the retailer's margin about 28 percent was the share of DFPCL for its services provided to the retail outlet. The marketing margins as a percentage of retail price was 24.88 percent in case of EMC, while it was 33 percent in case of TMC. The MME was 2.54 in case of EMC while it was as low as 0.87 in case of TMC.

Table 5.2: Price Spread and Marketing Costs for Pomegranate (2009)

(Rs per quintal)

Price Spread	TMC	EMC
I Price received by farmer	3819	6100
II Total Marketing costs of farmer	330	-
(a) transport to APMC	23	-
(b) loading & unloading	2	-
(C) weighing & other related expenses	-	-
(d) commission	305	-
Net Price received by farmer	3489	6100
III Marketing Costs and margins of wholesaler	1681	-
(a) market fee	36.6	-
(b) hamali	2	-
(c) wastage during transport	245	-
(d) transport to terminal market	105	-
(e) wholesaler's margin	1292.4	-
Purchase price of wholesaler plus marketing costs & margins	5500	-
IV Marketing cost and margins of Retailer	2000	2400
(f) Hamali from point of purchase to tempo	10	2
(g) Transport to retail outlet	2	109
(h) Miscellaneous expenses such as cess to corporation, watchman for unsold stock	2	105
(i) Wastage	800	70
(j) Retailer's margin	1186	2114
(b) sale price of retailer	7500	8500
V Share of farmer (%) in retailer's price	46.5	71.76
VI Marketing Costs as % of retailer's price	20.43	3.36
VII Marketing margins as % of retailer's price	33	24.88
VIII Modified Measure of Marketing Efficiency (MME)	0.87	2.54

Source: computed from field data

3. The Benefit Cost Ratio for onions and pomegranates is indicated in Table 5.3. It can be observed that the BCR obviously reduces for both onion and pomegranate when family labour is included in cost of production. The BCR is higher in EMC for both horticultural crops in EMC as compared to TMC. In case of pomegranates especially, the BCR is much higher in EMC as compared to TMC. This is because as explained earlier, the price received in case of sales through EMC is 75 percent higher than that through TMC.

Table 5.3: Benefit Cost Ration for Onion and Pomegranate

Particulars	TC (cost of production includes only Paid out costs)	EMC (cost of production includes only Paid out costs)	TC (cost of production includes family labour)	EMC (cost of production includes family labour)
BCR for onion	2.15	2.67	1.69	2.13
BCR for Pomegranate	2.29	8.24	1.96	7.76

Source: Calculated from field data

4. Post harvest losses reduce the availability of the fruit and also increase the consumer's price. The post harvest losses observed from field survey are indicated in Table 5.4.

Table 5.4: Per quintal Post-harvest Losses

Post Harvest loss	Onion				Pomegranate			
	TMC		EMC		TMC		EMC	
	Quantity	SD	Quantity	SD	Quantity	SD	Quantity	SD
Loss during storage (kg)	24.90	3.3	4.98	0.82	19.91	3.1	9.70	0.52
Loss during transport	3.95	0.71	3.96	1.17	10.19	1.13	3.64	0.49
Loss at Retail level	6.53	2.18	5.97	1.81	2.93	1.52	1.33	1.13

Source; Field Survey

It was observed from Table 5.4 that post harvest losses were higher in TMC as compared to EMC for both crops. For every quintal of onion stored, a farmer lost about 25 kg under TMC while the loss is only about 5 kg in case of EMC. In case of EMC, farmers mainly dispose of their produce to the agent of the company. Their storage structures were also of better quality and hence there was less decay in the produce. In case of onions, it was observed that lean season prices were about Rs 900/- per quintal (2009) higher than peak season prices. Hence farmers store the produce for 5-6 months to avail of this price difference. Although stocking the produce sometimes leads to post harvest loss of 20 to 50 percent, farmers still find it economically beneficial to store the produce. The produce that deteriorates in quality is often sold at discount prices.

In case of pomegranate also, since quality of produce was better in EMC with better transport and packaging facilities post harvest loss was also less.

5. Besides post harvest losses, both crops also suffer huge losses on field. Onion is mainly a rainfed crop and in case of excessive or uneven rainfall, the crop is affected by diseases such as purple blotch and basal rot which lead to both quantitative and qualitative losses in yield. Pomegranate crop also suffers from huge losses due to oily spot disease which sometimes destroys the entire crop.
6. Farmers were normally aware of prices prevailing in regulated market soon after harvest. They sold their produce in regulated market, to a trader through commission agent. Although the commission agent ensured them timely payment for their produce, they expressed low confidence in him. This was because often the commission agent was a close relative or even brother of the trader and the farmer felt that the agent was biased towards the trader. Farmers also suspected collusion amongst traders so that price would not rise above a certain level.
7. While farmers opined that village roads were average or good quality, the main complaint in case of sales through TMC was that internal roads in the market yard were very poor which created problems during monsoons. Traders, especially complained that overall conditions in the APMC were very unhygienic and there was no provision for covered sales in the rainy season which spoilt the produce. With respect to godown and cold storage facilities, majority of farmers revealed that these facilities were poor but other facilities such as auction, supervision of sale, loading, sorting, weighing were either satisfactory or good. They also opined

that internal telephone facility, computer facilities and banking facilities were average quality.

8. After sale of produce, by and large farmers were unaware of the supply chain. They were only concerned with the price received for their produce and their sale receipts. Farmers, however suggested that when onion prices shoot up, the government often imposes a ban on exports which deprives them of getting the benefit of higher international prices. Thus in order to protect the consumers, farmers often suffer losses, besides having to cope up with crop failure.
9. The main constraint that farmers selling through EMC was that EMC buys only limited produce and of selected quality. For example, in case of pomegranate, the fruit should weigh atleast 200 gms, free of defects and appearance should be good. Since only quality produce is picked up in EMC, the balance produce is treated as low quality and sold at a lower price. Therefore farmers felt that in some cases the overall average price for their entire produce does not fetch them higher returns as compared to sales through TMC. Farmers felt that EMC is still at an early stage and not on a strong foundation. However, they benefited by selling through this channel, because they saved marketing costs, especially commission charges which was as high as 8 percent in case of pomegranates.
10. Consumers had different views about purchases from organized retail or through traditional retail outlets. Consumers from higher income groups preferred supermarkets because they are self serving stores offering a wide range of products at competitive prices. Supermarkets also advertise their products in newspapers or pamphlets so that consumers are aware of prices and discount offers. Consumers also prefer supermarkets because they feel that products are sorted, graded, labeled and well packed. Some supermarkets also offer organic fruits and vegetables which meet their requirements of “food safety”.

Some consumers however felt that produce in supermarkets is not farm fresh but has been refrigerated and stored for a long time. Conversely, the produce in the local mandis is fresher and has not been put through any processing and also holds an advantage in terms of price and quality.

5.6 Policy Implications:

1. In case of marketing through TMC, it was observed that internal roads were poor and conditions in the market were unhygienic. Infact, some traders indicated that despite them paying market fee for development of the APMC, facilities were very poor. There was also no provision for covered sales and in the event of sudden rain, the produce gets damaged and losses are incurred by farmers as well as traders. Thus all round efforts should be made by APMCs such as Satana to improve marketing facilities such as display of prices, good quality roads, provision for covered sales, etc. (Attn: Maharashtra State Agricultural Marketing Board, Pune).
2. The Secretary of APMC, Satana revealed certain lacuna in the TMC. He explained that the trader has to give a bank guarantee according to his limit of purchase. In some cases however, the trader exceeds his limit and buys more than his entitlement. In such cases if he does not pay the farmer for produce purchased from him, then it is difficult for the Market Committee to settle this issue through legal methods. The APMC law is weak on this point and suitable amendments are required. There were also instances when payment made by traders to the farmers was delayed. Further, the Market Committee authorities also stated that the receipt given by the trader does not have any legal stand and policy must be addressed to this issue (Attn: Department of Cooperation, Textiles and Marketing, Government of Maharashtra).
3. Farmers felt that in case of fruits, the commission charges of 8 percent were very high and this reduced their net returns. In case of onions, the farmers complained that the commission agent as a regular practice deducted the price of 2 kg for ever quintal sold on grounds of it being wastage. Such deductions reduced their net returns. Therefore, such unhealthy practices should not be encouraged (Attn: APMC Marketing Committee and Maharashtra State Agricultural Marketing Board, Pune).

4. Farmers incur huge post-harvest losses which bring about a supply constraint and consequent rise in prices. Onion storage is essential to even out supplies throughout the year. Thus not only should construction of storage structures be promoted but they should be constructed in a scientific manner to prevent entry of moisture and creation of dampness. There should be sufficient space for ventilation from all sides with periodical disinfection to prevent wastage. It is observed that the government is not complacent on this issues and large number of onion chawls are being constructed. However, number of quality chawls must be increased. Further, irradiation of onions inhibits the bulb from sprouting and thus increases the shelf life. Also dehydration of onion is a method of converting perishable onion in the form of non perishable dehydrated flakes or powder. Such processing must be encouraged to avoid post harvest losses. (Attn: Department of Cooperation, Textiles and Marketing, Government of Maharashtra/ Maharashtra State Agricultural Marketing Board, Pune).
5. Pomegranate has tremendous export potential but only a negligible portion of production is exported. This horticultural crop can be cultivated throughout the year in Maharashtra and can be exported during February to July when no other country is in a position to export. Hence post harvest infrastructure in the form of grading, pack houses, cool chains and GAP certification will enable the farmers to secure higher returns. Market research and market support is therefore necessary to boost exports and also increase supply in the domestic market (Attn: Department of Cooperation, Textiles and Marketing, Government of Maharashtra; National Horticulture Board/ Maharashtra State Agricultural Marketing Board, Pune).
6. With respect to EMC, the main constraint was that EMC purchased limited quantity and only superior quality produce. EMC has to therefore increase the scale of its operations to serve as a competitor to APMC and so that more farmers benefit by selling through this channel.

7. EMC must also increase the scale of its extension services so that more farmers can benefit from cost effective solutions, complete agronomic advisory service, pre and post-harvest technology dissemination and all round efforts to make the Indian farmer globally competitive.

Overall, the study concluded that farmers have benefitted by selling their produce through EMC in case of both crops mainly because they did not have to bear marketing costs. However, the marketing operations of EMC are very limited and restricted to purchase of superior quality produce which enables farmers to secure higher price. Further, these operations by and large reach farmers who have availed of the farm advisory services of EMC through expert advice, field visits and crop guidance. Obviously, since EMC is still in an early stage, it will take time for private sector to expand the scale of its operations and emerge as a major marketing channel. Thus, expansion of organized retail along with extension support as well as strengthening and upgrading infrastructure in regulated markets will promote agricultural marketing, reduce post harvest losses and finally benefit the producer as well as consumer.

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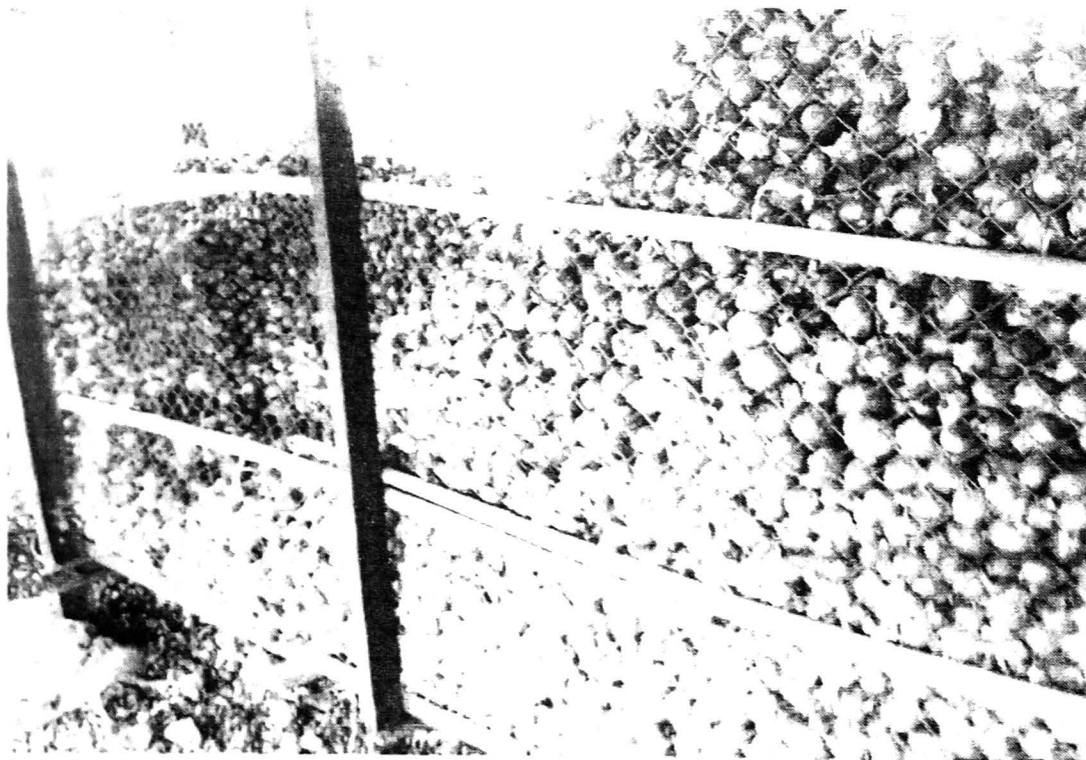
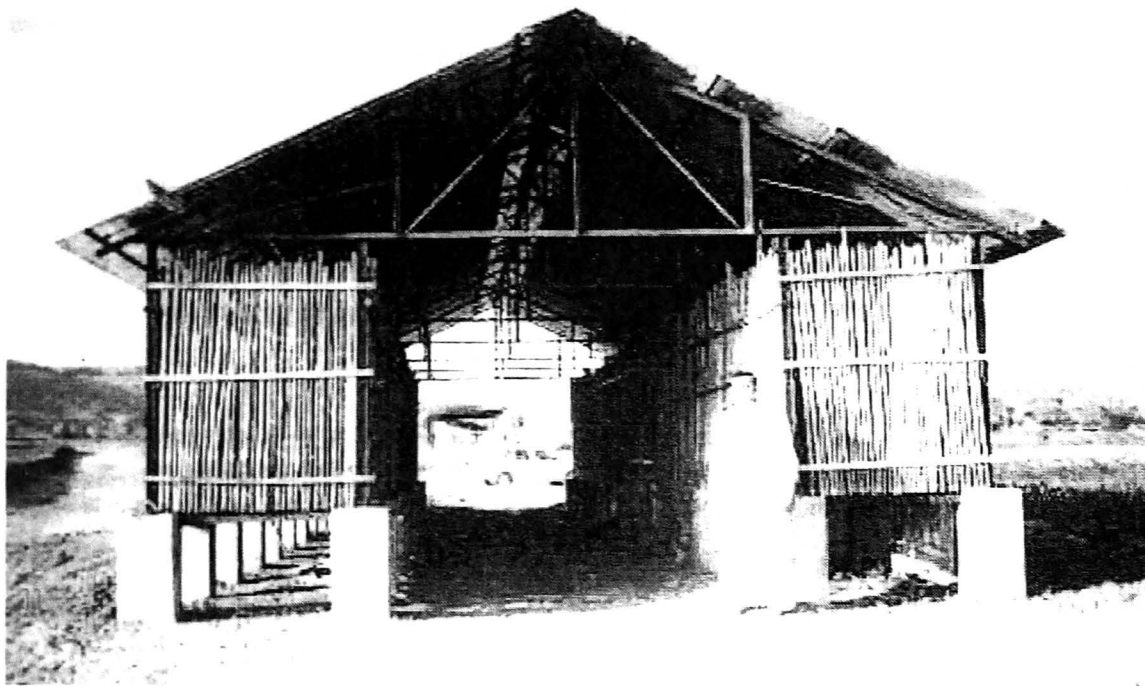
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- *Agricultural Produce Marketing committee, Satana*
- *Commissionerate of Agriculture, Government of Maharashtra, Pune*

Onion Storage Structure (*Kanda Chawl*)



Annexure II

Comments on the report received from Institute of Economic Growth, New Delhi.

1. Title of the draft report examined : “Impact of Emerging Marketing Channels in Agriculture Marketing-Benefit to Producers-Sellers and Marketing Costs and Margins of Major Agricultural Commodities”
2. Comments on the report : -
 1. In Page 1, rewrite or elaborate on the term ‘orderly transactions’
 2. In the objectives of the study use the terms analyse/estimate instead of ‘observe’ (for objectives 1 and 2) and for objectives 4 use the term document/analyse instead of ‘observe’
 3. In Page 38, there is an attempt to relate the cropping pattern to the caste group. Unless there is a strong rustication for retaining this, it could be dropped.
 4. In page 41, section 3.3.2, the term ‘Onion *Chawl*’. Elaborate on this and provide a box item to ensure a better understanding of this.
 5. In page 63, there is a statement that –“It can be observed that the productivity of onions per hectare is higher in EMC as compared to the TMC by 5 percent”. Comment on whether such a difference is statically significant and what are the causative factors for this?
 6. In page 63, it is stated It may be noted that Rs. 711/- per quintal isthe weighted average price of the sample farmers which is calculated by using quantity sold as weights’. Elaborate on this and provide a footnote to explain and illustrate as how this figure is arrived at. This would provide greater clarity.
 7. In Table 4.9, include a row, where margin includes the farmer’s margin (not including family labour and net of farmers marketing cots).
 8. In Table 4.10, provide farmers’ share in the Total Margin.
 9. In p.79, in the last para- “This was mainly because...was collusion amonghst them”. These are good qualitative data. Provide a Box item on this in page 80, similar to the lengthy box item in Page 79.
 10. Ensure that the relevant tables and texts report among other things the findings based on data using Paid-out costs (tahtis, excluding imputed fam,ily labour cots) in both the text and in the tables.
 11. The document GOI (2008), cited in the text of the report is missing in the References List. Check that all the references cited in the text of the report are also reported in the Reference list.

Annexure III

Action taken by author based on the comments received from the Coordinator of the study:

All the comments made by the Coordinator of the study have been addressed at the appropriate place in the report.

**Sangeeta Shroff, S.S. Kalamkar and Jayanti Kajale
April 26, 2011**



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