

CHAPTER- III

AN ANALYSIS OF MARKETING NETWORK OF AGRICULTURAL COMMODITIES

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3.1 Introduction

India's economy is basically based on agriculture in many important respects. "The share of agriculture in the country's GDP constitutes about 18 percent. Agriculture provides a livelihood for approximately 600 million citizens, at least indirectly" (India - Agricultural Economy and Policy Report - Govt. of India, 2009). Agricultural production is a crucial necessity for the economic development of the country. At the same time, it cannot be denied that effective marketing of agricultural produces are supposed to bring augmentation as well as diversification of agricultural produce and thereby enabling the rural cultivators to make economic gains (Agarwal, 1988). Agricultural marketing is a series of activities involved in moving the agriculture goods from the point of production to the point of consumption. This includes assembling, grading, storage, transport, processing, wholesaling, retailing and export as well as accompanying supporting services such as market infrastructure, establishment of grades and standards and the institutions involved in performing the above functions. The agricultural marketing system is a link between the farm and the non-farm sectors. The National Commission on Agriculture defined 'agricultural marketing' as a process which starts with a decision to produce a saleable farm commodity and it involves all aspects of market structure of system, both functional and institutional, based on technical and economic considerations and includes pre and post harvest operations, assembling, grading, storage, transportation and distribution. The Indian Council of Agricultural Research defined involvement of three important functions, namely (a) assembling (concentration) (b) preparation for consumption (processing) and (c) distribution. Marketing of agricultural produce is a complex task involving various stakeholders, products and business scenarios. In a developing country like India, this activity is influenced by local, socio-economic and cultural characteristics. Agriculture distribution chains are highly fragmented and are dominated by small and large scale enterprises. Marketing infrastructures are inadequate and farmers tend to receive a small share of the final consumer price. The marketing system is seen as efficient if the movements of goods from producer to consumers is undertaken at lowest cost consistent with the provision of services and facilities that consumers desire and able to pay for. The conflict of interests between various stakeholders as producers want high possible return, firms and businessmen interested in maximum profitability and consumer's desire to have requirements at lowest possible

price, give continuous controversy to marketing problems. These changing conditions impart dynamic character to agriculture marketing.

3.2 Concept of marketed surplus

Farm sector plays a key role in economic development of India. Nearly 70 percent of the population derives its livelihood from agriculture and allied rural occupations. About half of geographical area is utilised for producing a wide range of agricultural crops under different agro-climatic conditions across the country. The cropping displays the spectrum of crops in that about three-fourth of the area planted is under the food crops like rice, wheat, maize, jowar, sugarcane, gram, fruit and vegetables etc, while the remaining area is under non-food crops like jute, cotton, tobacco etc. Intensive application of technology to agriculture has brought about remarkable increase in aggregate production of crops. The breakthrough in production eventually gave rise to increased marketable and marketed surpluses and demand for efficient marketing system (Bhat, 1996). Markets of agriculture produces have expanded rapidly after independence. Several factors contributed to this. These are increase in production and commercialisation, development of communication and transportation facilities and the extension of the market network. As the distance between market place and the production point decreased, sales within the village fell sharply and proportion of the surplus sold in markets followed a sharp increase. This can be seen from the proportion of production that was spread for sale and the absolute surplus of the marketed surplus of various commodities. Precise information about marketed surplus at country level is not available, but estimates of marketed surplus ratio (MSR) derived from "Cost of Cultivation" data collected from major producing states under the auspices of Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, are used as an indicator of surplus.

Farm production and marketed surplus increase manifold with the adoption of new technology of production. The concept of production for home shifted to production for the market. Further, specialisation in production increased and as consequence marketed surplus on all most size groups of farms went up. This increased marketed surplus enthused the farmers to become price conscious and as a consequence marketing aspect started receiving their greater attention. Agriculture marketing practices are determined

by the surplus available with the individual farmer. Dharma Narain (1961) in a comprehensive study estimated that in 1950-51, marketed surplus as a percentage of gross value of output was around 33.4 percent. There are no such comprehensive estimates available for recent period. The task force on terms of trade appointed by the ministry of agriculture for the purpose of working out the weights for constructing the index of prices received by agricultural sector estimated the value of marketed surplus for the triennium ending (TE) 1990-91 (Govt. of India, 1995). According to the estimates, the marketed surplus-output ratio during TE 1990-91 was 64.1 percent.

An analysis of marketed surplus output ratio for various agricultural commodities has been given in the table 3.1. The analyses illustrated that from time of independence to recent past the marketed surplus output ratio for all agricultural commodities has been amplified upwardly. The marketed surplus output ratio of rice has gone up from 30 percent during 1950-51 to 72.64 percent during 2007-08. For wheat, the marketed surplus output ratio has increased as 61.87 percent for 2007-08 as against 30 percent for 1950-51. Similarly for coarse cereals (bajra, jower and maize), the marketed surplus output ratio went up from 24 percent in 1950-51 to 82.87 percent in maize and 61.46 percent in jower in 2007-08. During this period the marketed surplus output ratio of various oil seeds and pulses have also went up moderately.

The quantity of marketed surplus of individual agricultural products or product groups has increased enormously during the last fifty years. The details are given in table 3.2. The marketed surplus of cereals is estimated to have gone up from 11.5 million tonnes during 1950-51 to 116.5 million tonnes during 1990-00. This has happened on account of increase in both output and marketed surplus ratio. The marketed surplus of rice is estimated to have gone up from 6.2 to 53.8 million tonnes, wheat from 1.9 to 46.4 million tonnes, bajra from 0.7 to 2.6 million tonnes, jower from 1.3 million tonnes to 4.8 million tonnes and other cereals from 1 to 2.5 million tonnes. In the case of pulses, the quantity of marketed surplus is estimated to have gone up from 3.9 million tonnes during 1950-51 to 8.1 million tonnes during 1999-00. For food grains as a whole, the marketed surplus is estimated as 124.6 million tonnes for 1999-00 as against 15.4 million tonnes for 1950-51. During this period the marketed surplus of oil seeds went up from 3.8 million tonnes to 17.3 million tonnes. The quantity of marketed surplus was cent percent of output in the

case of cotton, jute and mesta. For Jute and mesta the marketed surplus is estimated to have gone up from 3.3 million tonnes during 1950-51 to 10.5 million tonnes during 1990-00 and for cotton from 3.0 million tonnes to 11.6 million tonnes. The marketed surplus of sugarcane went up from 57.0 million tonnes to 246.2 million tonnes during this period. There has been considerable increase in the marketed quantities of vegetables and fruits. The marketed surplus of both of these taken together is estimated to have gone up from 38.2 million tonnes during 1981-82 to 118.6 million tonnes during 1990-00. (Narain, 1961; Raju, 1976; Govt of India, 1995; Govt of India, 2001 and Kumar and Mathur, 1996).

A relation has been established with marketed surplus-output ratio and holding size group wise farm for the period 1950-51 (table 3.3). It exposes that there has been an increasing tendency in the ratio with the increase in holding size of the farm. Another estimate has been done for three cereals. According to that there is a clear tendency for these ratios to rise with the increase in farm size (Narian, 1961). The marketed surplus-output ratio for paddy/rice is 27.6 percent on marginal farms, 34.8 percent on small farms, 43.8 percent on medium farms and 51.7 percent on large farms. The overall average ratio was estimated as 41.7 percent. The trend is similar in the case of wheat and maize (table 3.4).

Table- 3.1: Marketed surplus output ratio of important agricultural commodities in India at different points of time

(Percent of Production)

Commodity	1950-51	1997-98	2002-03	2007-08
Rice	30.0	60.1	69.1	72.64
Wheat	30.0	61.4	66.3	61.87
Bajra	27.0	47.2	59.8	61.78
Maize	24.0	59.1	67.2	82.87
Jower	24.0	55.0	55.3	61.46
Other Cereals	18.0	----	31.1	----
Total Cereals	29.2	----	66.5	----
Gram	35.0	----	74.3	90.81
Arhar	50.0	47.2	77.5	79.16
Urad	----	53.2	85.9	80.06
Moong	----	76.5	73.0	84.37
Other Pulses	55.0	72.1	72.1	----
Total Pulses	45.3	----	77.1	----
Total Food grains	30.3	72.4	67.2	----
Groundnut	68.3	----	77.7	88.61
Mustard	84.3	82.4	77.2	95.44
Sesamum	----	69.3	94.1	85.98
Sunflower	----	86.9	100	96.44
Soyabean	----	93.8	92.8	96.34
Other Oilseeds	86.3	94.1	94.1	----
Total Oilseeds	73.6	86.3	85.8	----
Sugarcane	100.0	92.5	97.9	100.00
Cotton	100.0	100.0	100.0	96.15
Jute and Mesta	100	87.3/96.5	84.6	84.78
Total Fruits	----	97.0	89.8	----
Onion	----	----	----	82.91
Potato	----	----	----	85.00
Total Vegetables	----	83.0	79.2	----

Sources:

Dharam Narain (1961), Distribution of Marketed Surplus of Agricultural Produces by Size level of Holding in India, Institute of Economic Growth, Occasional Paper No.2, pp 33-38 for 1950-51.

Acharya, S.S. (2004), Agriculture Marketing in India, Millennium Study of Indian Farmers, Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India.

Agriculture Statistics at a Glance (2003), Ministry of Agriculture, Govt. of India.

Annual Report (2009-10), Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Government of India

Table 3.2: Marketed surplus of agricultural commodities

(Million Tonnes)

Commodities	1950-1951			1999-2000		
	Production	MS Ratio %	MS	Production	MS Ratio %	MS
Rice	20.58	30.3	6.2	89.50	60.1	53.8
Wheat	6.46	30.0	1.9	75.60	61.4	46.4
Bajra	2.60	27.0	0.7	5.58	47.2	2.6
Maize	1.73	24.0	0.4	10.78	59.1	6.4
Jower	5.50	24.0	1.3	8.70	55.0	4.8
Other Cereals	5.54	18.0	1.0	5.34	46.7	2.5
Total cereals	42.41	29.2	11.5	195.50	59.6	116.5
Gram	3.65	35.0	1.3	5.08	47.2	2.4
Arhar	1.72	50.0	0.9	2.65	53.2	1.4
Other Pulses	3.04	55.0	1.7	5.77	74.3	4.3
Total Pulses	8.41	45.3	3.9	13.40	60.4	8.1
Total Food grains	50.82	30.2	15.4	208.9	59.6	124.6
Groundnut	3.48	68.3	2.4	5.30	82.4	4.4
Mustard	0.76	84.3	0.6	6.00	69.3	4.2
Other oilseeds	0.92	86.3	0.8	9.60	91.1	8.7
Total Oilseeds	5.16	73.6	3.8	20.9	82.8	17.3
Sugarcane	57.05	100.0	57.0	299.2	82.3	246.2
Cotton*	3.04	100.0	3.0	11.60	100.0	11.6
Jute and Mesta**	3.31	100.0	3.3	10.50	100.0	10.5
Fruits	----	----	----	49.5	97.0	48.0
Vegetables	----	----	----	85.0	83.0	70.6
Total Fruits and Vegetables	54.52***	70.0	38.2	134.5	88.2	118.6

Source: Dharam Narain (1961), Raju (1976), Govt of India(1995), Govt of India(2001) and Kumar and Mathur(1996).

MS: Marketed Surplus;

* Million bales of 170 kg each;

** Million bales of 180 kg each;

*** Pertains to year 1981-82;

MS-output ratio based on Government of India (1995, 2001c).

Table 3.3: Distribution of marketed surplus by holding size-group (1950-51)

Size of Holdings(Acres)	Marketed Surplus as % of Gross Value of Output	Marketed Surplus Share (%)
0-5	33.6	26.0
5-10	27.4	20.5
10-15	23.1	7.9
15-20	30.1	8.0
20-25	32.2	5.1
25-30	39.7	50.4
30-40	39.8	6.4
40-50	46.4	5.0
50 and above	51.4	15.7
Total	33.4	100

Source: Dharam Narain (1961)

Table 3.4: Marketed surplus of paddy/rice, wheat and maize on different size group of farms in India (1983-84)
(Percent of Production)

Commodity	Marginal	Small	Medium	Large	Overall Average
Paddy/Rice	27.6	34.8	43.8	51.7	41.7
Wheat	23.5	32.3	62.3	73.0	58.9
Maize	12.8	20.6	38.1	45.0	28.9

MS: Marketed Surplus

Source: Directorate of Marketing & Inspection, Govt. of India, Faridabad, (1995)

3.3 Marketing channels of various agricultural produces

Farmers producing agricultural produces are scattered in remote villages while consumers are in semi-urban and urban areas. This produce has to reach consumers for its final use and consumption. There are different agencies and functionaries through which this produce passes and reaches the consumer. A market channel or channel of distribution is therefore defined as a path traced in the direct or indirect transfer of title of a product as it moves from a producer to an ultimate consumer or industrial user. Thus, a channel of distribution of a product is the route taken by the ownership of goods as they move from the producer to the consumer or industrial user. Agricultural commodities move in the marketing chain through different channels. The channels are distinguished from each other on the basis of market functionaries involved in carrying the produces from the

farmers to ultimate consumers. The length of the marketing channel depends on the size of market, perishability of commodity and the nature of demand at the consumer level (Raju and Von Oppen, 1980).

There are various phases in marketing of agricultural produces. After harvesting produces are transform in to desirable form for acceptable at the rural primary market. At the rural primary markets producers change of hands to village merchant or the agent of buyers or local consumers. Next at the assembling markets village merchants/producer-sellers sell the produces to primary wholesalers or commission agents for onward dispatch to the clients in the up-country markets. After the assembling markets primary wholesaler/commission agent sell the produces at secondary market and distribute that to the terminal market. At the terminal markets produces trade for vending through wholesaler and retailer for final consumption or for shipment to other countries. Ultimately, the produces are consumed by the individual customer at retail level or transport to processing unit.

During the last fifty years some important characteristics and changes in marketing channels of agriculture produces has been witnessed. These are as follows: (i) The proportion of total marketed surplus going directly from farmers to consumers continues to be small. (ii) The role of transporters and processors in the marketing channel has considerably increased. (iii) Specialization of traders in agricultural marketing, both in terms of commodity or marketing functions has shown an increasing tendency. (iv) The length of marketing channel has tended to increase due to increase in demand for value-added services and geographic expansion of markets. (v) The share of private trade in handling marketed surplus has continued to be large. Taking all agricultural commodities together, the marketed surplus handled by cooperatives has been estimated as 10 percent, and by public agencies 10 percent. The private trade handles around 80 percent of the total marketed quantities of agricultural commodities (Acharya, 1994). (vi) Direct marketing by farmers has been encouraged during the last one decade. Several states took initiative and established farmers' markets like 'Apni Mandi' (Punjab), 'Kisan Mandi' (Rajasthan), 'Hadaspur Vegetable Market' (Pune), 'Rythu Bazaars' (Andhra Pradesh) and 'Krushak Bazaars' (Orissa). The establishment of such farmer markets helped both consumers and farmers (Acharya 2004).

The main functionaries in the marketing channel for agricultural commodities include village traders, primary and secondary wholesalers, commission agents, processors and retailers including vendors. Public agencies, farmers' cooperatives and consumers' organisations also perform many marketing functions. Government intervention in the purchase of agricultural commodities under minimum support price programme, procurement of food grains, market intervention scheme, open market purchases of commodities by National Agricultural Cooperative Marketing Federation (NAFED), Cotton Corporation of India (CCI), Jute Corporation of India (JCI) and State Oilseed Federations have been in existence for many years. The quantity of commodities purchased by public agencies depended on the objectives of the intervention. The entry of public and cooperative agencies altered the existing marketing channels and also their importance in terms of quantity marketed through them. The basic objective of entry of these agencies is to safeguard the interest of producer-farmers along side providing food security to consumers through operating a public distribution system. With the intervention in the purchase and distribution of foodgrains, especially rice and wheat, government purchasing agency (Food Corporation of India) entered as an important market functionary in the trade of cereals. Jute Corporation of India (JCI) is also an important government agency that intervenes in the jute marketing system. Cooperatives have also assumed importance in the marketing channel with the encouragement to producers or consumers. Cotton Corporation of India (CCI) along with the state level cooperative federations, are now the important buyers of fiber crop products from farmers (Government of India, 2007).

There are different factors that affect the channels of distribution depending upon type of produce or commodity. Each commodity group has slightly different channel. The factors are: (i) Perishable nature of produce, (ii) Bulk and weight, (iii) Storage facilities, (iv) Weak or strong marketing agency, (v) Distance between producer and consumer, whether local market or distant market. These channels of distribution can be divided into following broad groups viz., (i) direct to consumer, (ii) through wholesaler and retailers, (iii) through public agencies or cooperatives and (iv) through processor

The common marketing channels for Food grains have been identified as follows (Ram 1999).

- Channel I Producer - Retailer – Consumer
- Channel II Producer - Village merchant - Retailer - Consumer
- Channel III Producer - Wholesaler - Retailer - Consumer
- Channel IV Producer - Commission Agents - Wholesaler in the primary assembling markets - Commission Agent - Wholesaler in the secondary markets - Retailer - Consumer
- Channel V Producer - Commission Agents - Processing units - Wholesaler - Retailer - Consumer.
- Channel VI Producer - Commission Agents - Wholesaler - Forwarding Agents - Exporters
- Channel VII Producer - Government institutions like FCI through procurement agencies - Fair price shops - Consumer

The following are the important marketing channels have been identified in the marketing of paddy/rice (www.agmarknet.nic.in)

- Channel I Producer - Miller-Wholesaler- Retailer-Consumer
- Channel II Producer - Itinerant Merchant - Miller - Wholesaler - Retailer - Consumer
- Channel III Producer - Wholesaler (Paddy) - Miller - Wholesaler (Rice) - Retailer - Consumer
- Channel IV Producer - Miller - Retailer - Consumer
- Channel V Producer - Miller - Consumer
- Channel VI Producer - Procuring Agency (FCI/State Govt./Co-operatives) - Miller (FCI/Co- operatives/Private) - Distributing Agency (State Govt.) - Fair price/Ration shop - Consumer

Marketing channels for various cereals in India are more or less similar, except the channel for paddy (or rice) where rice millers come into the picture (Acarya and Ararwal, 1987). Marketing channels of vegetable vary from commodity to commodity and producer to producer. In rural areas and small towns, many producers perform the function of retailers. Large producers sell their produce through whole seller, commission agent and other functionaries of marketing channels. The marketing channels for vegetables have been identified (Kumar *et al.*, 2008) as follows.

- Channel I Producer-Commission Agent-Wholesaler cum Retailer- Retailer-Consumer
- Channel II Producer - Commission Agent - Retailer - Consumer
- Channel III Producer -Wholesaler cum Retailer- Retailer - Consumer
- Channel IV Producer - Wholesaler cum Retailer - Retailer - Consumer

In marketing of off-season vegetables in Himachal Pradesh, following marketing channels have been identified (Thakur *et al.*, 1994)

- Channel I Farmer - Primary Wholesaler or Commission Agent - Secondary Wholesaler - Retailer - Consumer (58.9 per cent)
- Channel II Farmer-Forwarding Agent -Wholesaler -Retailer -Consumer (23.9 per cent)
- Channel III Farmer - Retailer - Consumer (10.7 per cent)
- Channel IV Farmer - Village trader - Wholesaler - Retailer - Consumer (6.5 per cent)

Channel I is most important channel because highest quantity of marketed surplus that is 58.9 percent of quantity surpluses have been transferred through this channel.

The marketing channel for raw cotton have been identified (Krishnaiah, 1998) are as follows

- Channel I Producer - Ginner
- Channel II Producer - Village Trader - Local Ginner
- Channel III Producer - Trader - Ginner
- Channel IV Producer - Trader - Cotton Corporation of India - Ginner
- Channel V Producer - Public Agency or Cooperative - Ginner

Four marketing channels of tobacco were identified in Bihar but the most common practice is to sell the produce to the contractors (Singh *et al.* 1994).The Channels are as follows.

- Channel I Farmer -Outside Trader (Commission Agents)- Wholesaler- Retailer - Consumer (73.8 per cent)
- Channel II Farmer -Wholesaler/Commission Agent - Retailer - Consumer (8.3 per cent)
- Channel III Farmer - Village Trader - Wholesaler/Commission Agent - Retailer - Consumer (13.6 per cent)
- Channel IV Farmer - Retailer - Consumer (4.3 per cent)

The marketing channels of onion were identified in Kolar district (Shyamsunder *et al.* 1996). Among the four other channels channel II was the most important channel from the standpoint of quantity surpluses which estimated as 69.4 percent passed through this channel. The channels are as follows.

- Channel I Producer -Village Trader -Wholesaler -Retailer -Consumer (12.3 per cent)
- Channel II Producer -Wholesaler -Retailer - Consumer (69.4 per cent)
- Channel III Producer - Commission Agent - Trader cum Retailer - Consumer
- Channel IV Producer - Commission Agent - Cart Vender - Consumer

The marketing channels for fruits and vegetables have been identified as follows (Ram, 1999)

Channel I	Grower - Consumer
Channel II	Grower - Retailer - Consumer
Channel III	Grower - Growers' Cooperative - Commission Agent - Retailer - Consumer
Channel IV	Grower - Forwarding Agent - Commission Agent - Retailer - Consumer
Channel V	Grower - Growers' Representative - Retailer - Consumer
Channel VI	Grower - Wholesale Merchant - Retailer - Consumer
Channel VII	Grower - Wholesale Merchant - Commission Agent - Retailer in distributing market - Consumer
Channel VIII	Grower - Commission Agent – Wholesaler - Retailer – Consumer

With the expansion of transportation and communication network, changes in structure of demand and the development of markets, marketing channels for farm produces in India have undergone considerable changes, both in terms of length and quality.

3.4 Marketing infrastructure

Marketing infrastructure includes all those facilities and amenities needed for the smooth conduct of agriculture marketing which is necessary for the development of agrarian economy. The existence of adequate marketing infrastructure is important not only for the performance of various marketing functions and expansion of the size of the markets but also for the transfer of appropriate price signals leading to improved marketing efficiency (Acharay, 1994). The availability of different infrastructure affects the choice of technology to be adopted, reduces the cost of transportation, produces powerful impetus to production and also affects income distribution in favour of small and marginal farmers by raising their access to the market. In a developing country like India, marketing infrastructure plays a pivotal role in fostering and sustaining the rhythm of rural and economic development. Marketing is as critical to better performance in agriculture as farming itself. Though the role of infrastructure is the key element of any development program yet their role in distribution and marketing is the supreme.

The availability of marketing infrastructure affects the structure, conduct and performance of the market. Studies have shown that owing to considerable expansion in infrastructure, there has been significant increase in both horizontal and vertical integration of agricultural markets, which improved the process of price discovery and

transmission of price signals from deficit to surplus area. However, the existing situation is far from adequate. Nearly 51.6 percent of the villages are still not connected by roads. Grading at primary market level is grossly inadequate. Only around 7.3 percent of the total quantity sold in the regulated markets is graded before sale. The scientific storage capacity is only 30 percent of the required capacity. Cold storage facility is available for only 10 percent of fruits and vegetables (Acharya, 2004). Processing capacity is inadequate and inefficient. Physical infrastructure in market yards is inadequate. Most of the rural periodic markets (including livestock markets) have no infrastructure. Nearly 41 percent of the villages have no telephone facility. Due to lack of proper handling (cleaning, sorting, grading and packaging) at the village level, about 7 percent of food grains, 30 percent of fruits and vegetables and 10 percent of spices are lost before reaching the market (Acharya, 2004). These apart, there is considerable and continued inter-regional disparities in infrastructure for marketing. The index of infrastructure at state level compiled by the Centre for Monitoring Indian Economy (1997) (table 3.5) shows that the infrastructure is relatively well developed in the states of Kerala, Tamil Nadu, Haryana and Gujarat. But it has continued to be weak in Madhya Pradesh, Bihar and Rajasthan. This is, obviously, reflected in the inter-regional differences in efficiency of agricultural marketing.

Table-3.5: Relative infrastructure development index in states of India (All India =100)

States	1980-81	1993-94
Andhra Pradesh	98.1	96.1
Assam	77.7	78.9
Bihar	83.5	81.1
Gujarat	123.5	122.4
Haryana	145.5	141.3
Himachal Pradesh	83.5	98.8
Jammu & Kashmir	88.7	84.0
Karnataka	94.8	96.9
Kerala	158.1	157.1
Madhya Pradesh	62.1	75.3
Orissa	81.5	97.0
Punjab	207.3	191.4
Rajasthan	74.4	83.0
Tamil Nadu	158.6	144.0
Uttar Pradesh	97.7	103.3
West Bengal	110.6	94.2
All India	100.0	100.0

Source: Centre for Monitoring Indian Economy (CIME), March 1997.

3.4.1 Communication and transport infrastructure

A well-developed and efficient system of transportation helps in the expansion of markets, reduces the transport time and costs of transportation of the commodities. Movement of agriculture produces between places of production to markets and ultimately up to the place of consumption is very important as their production and consumption spread throughout the country. Trade and transport run side by side and one reinforces and strengthens the other. The expansion of roads and railway lines and the number of transport vehicles indicate the expansion of transportation facility in the country. Majority of perishable farm products are still confined to village markets for sale of their produce due to insufficient means of roads and transportation. The status of length of roads, railway lines and vehicles in the country at different point of time is shown in table-3.6 and 3.7. The length of roads has considerably gone up during the last fifty years. There has been considerable increase in national and state highways also. The numbers of vehicles running on these roads have also increased. The total road length in the country increased from 400.0 thousand kms. in 1950-51 to 2626.0 thousand kms. in 1998-99. During this period the length of national highways increased from 19.8 thousand kms. to 49.6 thousand kms. and the state highways to 137.9 thousand kms. The length of railway route in the country increased from 53.6 lakh kms. in 1950-51 to 63.0 lakh kms. in 2000-01. However, the status of rural connectivity, which affects the farmers most, continues to be poor. So far only 48.4 percent of the villages are connected with roads (table- 3.8). The details of road connectivity of villages in India till mid-nineties according to the village size are presented in table- 3.8. During the period 1950-51 to 1999-2000, the number of goods carriers increased from 0.82 lakh to 26.81 lakh and goods carried by railways increased from 44.1 billion tonnes kms. to 315.5 billion tonnes kms.

The existing roadway and railway facilities in the country are highly inadequate. Railway route length in the country is not sufficient and electrified track is not even bare minimum. Rail lines even do not connect some of the districts in the country. The situation is worse in desert and hilly areas. There is also need to develop suitable and specialized roads, rail transportation facilities for transportation of perishable commodities. The air cargo facilities are also available in limited number of areas.

Existing air cargo facilities are in poor condition and much below the international standards. The ports and shipping facilities also need to be strengthened.

Besides above, telephone is also used as means of communication for marketing of agricultural commodities in India. Number of mobile enable services is addressing the information needs of the stakeholders to some extent. The dissemination of market information on price, arrival and other related information is provided at low cost and wider coverage. In the field of agricultural marketing presently mobile services are provided by IFFCO, Airtel, Reuters, ITC and MS Swami Nathan Research Foundation. The Communication technology has taken a big leap forward and received the national recognition as the key driver for development and growth. The gross telephone subscribers in the country reached about 943.49 millions as of February 2012 (mobile telephone subscribes about 911.17 millions) as compared to 384.79 million (mobile telephone subscribes about 346.89 million) as of December 2008. The over all tele-density reached 78.10 percent in February 2012 as compared to 33.23 per cent in December 2008 (TRAI, 2012).

Table- 3.6: Length of roads in India

(‘000)

Year	Length of Roads		National Highways	State Highways
	Total	Surface		
1950-51	400.0	157.0	19.8	NA
1960-61	524.5	263.0	23.8	NA
1970-71	915.0	398.0	23.8	56.8
1980-81	1485.4	684.0	31.7	94.4
1990-91	1998.2	1024.4	33.7	127.3
1996-96	2302.5	1263.4	34.5	135.2
1998-99	2626.0	1448.6	49.6	137.9
1999-2000	NA	NA	52.0	NA
2000-2001	NA	NA	57.7	NA

Source: Economic Survey 2002-03, Government of India, New Delhi.

Table- 3.7: No of transport vehicles in India

Year	Registered Vehicles			Railway Route		Goods Carried by Railways (Billion tonnes km)
	Total (Lakh)	Goods vehicles (lakh)	Buses (Lakh)	Total (Lakh km)	Electrified (Lakh km)	
1950-51	3.06	0.82	0.34	53.6	0.4	44.1
1960-61	6.65	1.68	0.57	56.2	0.7	87.7
1970-71	18.65	3.43	0.94	59.8	3.7	127.04
1980-81	53.91	5.54	1.62	61.2	5.3	158.5
1990-91	213.74	13.56	3.31	62.4	10.0	242.7
1995-96	337.86	20.31	4.49	62.9	12.3	273.5
1999-00	483.93	26.81	5.59	63.0	14.9	315.5

Source: Economic Survey 2002-03, Govt. of India.

Table- 3.8: Road connectivity of villages in India till middle of nineties

Group of Villages with Population	Villages Connected with Roads	Villages not Connected with Roads	Total
< 1000	172062 (37.45)	280733 (63.55)	452795 (100)
1000-1500	44031 (75.88)	13904 (24.12)	57935 (100)
>1500	65698 (91.73)	5713 (8.27)	71411 (100)
Total	281791 (48.41)	300350 (51.59)	582141 (100)

Note: Figures in parentheses are percentages of total number of villages in the respective rows.

Source: Acharya, 2004

3.4.2 Storage infrastructure

Agriculture produce storage facility helps the farmer/trader for carrying the agricultural produce from production seasons to consuming periods. Lack of inadequate scientific storage facilities cause heavy loss to farmers in terms of huge wastage of quantity and quality of crops. In general the seasonal fluctuations in prices are aggravated in the absence of these facilities. To have storage facilities in the country, the Agricultural

Produce (Development and Warehousing) Corporation Act was enacted in 1956. The State Governments also enacted the Warehousing Acts during July 1957 to August 1958. The Government of India bifurcated the Warehousing Act of 1956 into the National Cooperative Development Corporation Act, 1962 and the Warehousing Corporation Act, 1962. The schemes of warehousing, rural godowns and cold storages have been initiated by public, cooperative and private sectors in the country to meet the storage need of producers/traders in different areas. A list of state-wise storage facilities in India is given in table- 3.9

A three tier storage system exists in national, state, district and village level in the country. The Central Warehousing Corporation (CWC) has been providing warehousing facilities at the centres of all India importance and the State Warehousing Corporations (SWCs) and the State Governments at centres of States and district level importance. Cooperatives are providing storage facilities at the primary and marketing society's level, which are located at village. Financial assistance was provided to various States for construction of godowns at the rural level under the scheme of National Grid of Rural Godowns (NGRG). The Food Corporation of India (FCI) constructs godowns for storage of food grains procured by them. FCI constructs storage capacity at certain nodal points, keeping in view of its requirements. The Central Warehousing Corporation constructs/creates storage capacity for FCI as well as for the general warehousing. These organizations have constructed a number of warehouses in different states. The scientific storage capacity available in the country at the time of independence was negligible and increased thereafter. The number and capacity of warehouses of CWC and SWC in the country at different points of time have been given in table- 3.10. Considerable efforts were made to increase the storage capacity in the country. The number of warehouses, which had increased from only 7 during 1957-58 to 703 during 1970-71 and went up to 2115 during 2001-02. The total capacity of warehouses which was almost negligible during 1957-58 and went up to 274.66 lakh tonnes at the end of March 2002. Out of the total storage capacity of 275 lakh tonnes, nearly 89 lakh tonnes was with the Central Warehousing Corporation and remaining 186 lakh tonnes with State Warehousing Corporations. Apart from CWC and SWC, The Food Corporation of India has also increased storage capacity of 21 million tonnes. Most of the capacity is of covered type (table-3.11).

Table- 3.9: State-wise storage facilities in India

State	Number of Rural Godwons	No. of Godowns Available per 1000 Sq.km	Capacity(MT)	No. of Godwons per 1000 MT
Andhra Pradesh	310.00	1.19	1320000.00	58.38
Arunachal Pradesh	14.00	0.17	4000.00	13.97
Assam	2.00	0.03	10000.00	2.34
Bihar	334.00	3.55	33000.00	2.67
Chhattisgarh	--	0	0.00	0.00
Goa	0.00	0	0.00	0.00
Gujarat	97.00	0.49	90000.00	8.57
Haryana	217.00	4.91	1124000.00	67.93
Himachal Pradesh	40.00	0.72	3000.00	2.13
Jammu & Kashmir	0.00	0	0.00	0.00
Jharkhand	--	0	0.00	0.00
Karnataka	286.00	1.49	178000.00	14.25
Kerala	161.00	4.14	22000.00	36.67
Madhya Pradesh	332.00	1.08	601000.00	28.77
Maharashtra	38.00	0.12	132000.00	8.90
Manipur	9.00	0.40	1000.00	2.41
Meghalaya	19.00	0.85	2000.00	8.22
Mizoram	0.00	0	0.00	0.00
Nagaland	65.00	3.92	3000.00	5.12
Orissa	26.00	0.17	186000.00	24.54
Punjab	192.00	3.81	2464000.00	89.91
Rajasthan	22.00	0.06	2000.00	0.09
Sikkim	0.00	0	0.00	0.00
Tamil Nadu	106.00	0.82	16000.00	1.96
Tripura	0.00	0	0.00	0.00
Uttar Pradesh	92.00	0.39	453000.00	9.46
Uttarakhand	--	0	0.00	0.00
West Bengal	208.00	2.34	25000.00	1.48
All India	2570.00	0.79	6669000.00	25.44

Source: Compiled from the data obtained from Directorate of Marketing & Inspection, Ministry of Agriculture, Government of India, 2009, Faridabad

Table- 3.10: Number of capacity of warehouses in India (Including hired)

Year	Number			Capacity in Lakh Tonnes		
	CWC	SWC	Total	CWC	SWC	Total
1957-58	7	--	7	0.07	--	0.07
1960-61	40	266	306	0.79	2.78	3.57
1970-71	102	601	703	8.36	18.11	26.47
1980-81	230	1050	1380	37.89	50.00	87.89
1990-91	495	1331	1826	66.48	93.54	160.02
1995-96	458	1371	1829	69.24	114.71	183.95
2000-01	466	1639	2105	83.91	148.99	232.90
2001-02	475	1640	2115	89.17	185.49	274.66

CWC: Central Warehousing Corporation

SWC: State Warehousing Corporation Corporations

Source: Report of the Central Warehousing Corporation, Various Issues and Economic Surveys, Various Issues, Government of India, New Delhi

The cooperative marketing societies also provide storage facilities at primary market level. This sector has built a storage capacity of 13.55 million tonnes up to March 2002. The cooperatives have also constructed 175 cold storage warehouses with a total capacity of 2.14 lakh tonnes. The distribution of CWC, SWC, FCI and cooperative marketing societies' godowns constructed in the country is uneven across states with relatively poor storage facilities in the eastern states of the country. The available storage facility is also poor in the hilly and desert region. The Government of India has recently constructed rural godowns in rural areas under Gramin Bhandaran Yojana.

The total storage capacity available in the country in 1969 was only 10.9 million tonnes. This has increased to 70.1 million tonnes in 2000-01 (table-3.12). This is considerably short of the requirements. Private sector has also created facilities for storage of agricultural commodities nearby their place of business but most of these storage structures are unscientific and are located in the congested lanes of cities/towns. Private entrepreneurs are now being encouraged to establish scientific warehouses. In this

connection, it may be mentioned that in 2000-01, the government has launched a credit linked subsidy scheme for construction of rural godowns. The main objective of the scheme is creation of scientific storage capacity with allied facilities in rural areas to meet the requirements of farmers for storing farm produces, processed farm products, consumer articles and agriculture inputs.

Table-3.11: Storage capacity of Food Corporation of India

(Lakh Tonnes)

At the end of	Owned or Hired	Covered	Cover and Plinth (CAP)	Total
1990-91	Owned	119.97	10.42	130.39
	Hired	75.95	14.74	990.69
	Total	195.92	25.16	222.08
1995-96	Owned	168.24	57.66	225.90
	Hired	40.29	---	40.29
	Total	208.53	57.66	266.19
2000-01	Owned	125.97	24.33	150.30
	Hired	89.40	43.31	132.71
	Total	215.37	67.64	283.01

Sources: Report of the Expert Committee on Strengthening and Developing of Agricultural Marketing, Ministry of Agriculture and Cooperation, Government of India, New Delhi, June 2001

Table-3.12: Storage capacity available in India, 2000-01

(Million Tonnes)

Storage Capacity Created by the Agency	Storage capacity (owned)	
	1969	March 2001
1.Food corporation of India and department of Food	3.86	15.0
2.State Government	2.66	--
3.Central Warehousing Corporation (CWC)	0.96	6.5
4. State Warehousing Corporation (SWC)	0.83	11.2
5.Cooperatives	2.60	13.6
6.Rural Godowns and Godowns Created by Marketing Societies	---	13.5
7.Others	---	10.3
8.Total Storage Capacity	10.91	70.1

Sources: (i) Government of India, Planning commission, Forth Five-Year Plan 1969-74, New Delhi, 1969

(ii) Report of the Expert Committee on Strengthening and Developing of Agricultural Marketing, Ministry of Agriculture and Cooperation, Government of India, New Delhi, June 2001

(iii) Government of India, Planning Commission, Tenth Five Year Plan (2002-07)

Cold storage is an important infrastructure to enhance shelf life of perishable agricultural commodities. The available cold storage facilities were almost negligible in the country during 1950 and up to 1955 the total cold storage in the country was only 0.771 lakh tonnes. The rapid growths in the expansion of cold storage capacity were made after 1955. The cold storage capacity increased from 3.055 lakh tonnes in 1960 to 50.991 lakh tonnes in 1985, 85.800 lakh tonnes in 1995 and further more 153.85 lakh tonnes by end of March 2001. The total number of cold storage units in the country has increased from 359 in 1960 to 2795 in 1990 and went up to 4199 in 2001 (table- 3.13). Presently a total number of 5274 cold storages (table- 3.14) are in the country with a total capacity of 243.11 lakh tonnes. Most of these cold storage units are in the private sector. Public and cooperative sectors together account for a very small capacity. The present storage

capacity of cold stores is sufficient for only 12 percent of the total production of fruits and vegetables. The states like Assam, Himachal Pradesh, Jammu & Kashmir, Kerala, Sikkim and Tamil Nadu have cold storage capacity available only for one percent of their produces. There are only four states i.e. Punjab, Uttar Pradesh, West Bengal and Rajasthan which have more than all India average capacity available for their produce. Presently density of cold storage is about two per thousand sq. km of area. The sector wise distribution of cold storage facility available in India is shown in table-3.15. Private sector has played the crucial role in providing cold storage facility. Nearly 89 percent of total cold storage units are privately owned which account for 95 percent of the total cold storage capacity. The direct involvement of government in cold storage units is negligible. Looking to the available quantities of perishable products, the cold storage capacity available in the country is inadequate and requires their promotion both in the production as well as consuming areas of the State. The sector-wise break up of cold storage capacity is as given in table- 3.15

Table- 3.13: Growth of cold storage facility in India

Year	Number of Cold Storage Units in Operation	Storage Capacity (Lakh Tonnes)
1947	4	0.031
1952	100	0.592
1955	NA	0.771
1960	359	3.055
1965	615	6.820
1970	1218	16.380
1975	1615	20.530
1980	2283	39.650
1985	2522	50.991
1990	2795	68.150
1995	3167	85.800
1996	3253	87.300
2001	4199	153.85

Source: (i) Economic Survey, Various Issues, Ministry of Finance, Government of India, New Delhi.

(ii) Directorate of Marketing and Inspection (1995), Ministry of Agriculture, Government India, Faridabad.

Table- 3.14: State-wise cold storage facilities in India

State	No. of Cold Storage	Capacity (MT)	Cold storage/1000 sq.km	Capacity Available/1000MT
Andhra Pradesh	290.00	900606.00	1.12	0.05
Arunachal Pradesh	1.00	5000.00	0.01	0.02
Assam	24.00	88068.00	0.31	0.01
Bihar	246.00	1147041.00	2.61	0.06
Chhattisgarh	69.00	341885.00	0.51	0.07
Goa	29.00	7705.00	7.83	0.04
Gujarat	398.00	1267304.00	2.03	0.09
Haryana	244.00	393121.00	5.52	0.09
Himachal Pradesh	18.00	19858.00	0.32	0.01
Jammu & Kashmir	19.00	42869.00	0.09	0.01
Jharkhand	45.00	170148.00	0.56	0.04
Karnataka	170.00	407165.00	0.89	0.03
Kerala	193.00	58105.00	4.97	0.01
Madhya Pradesh	197.00	808052.00	0.64	0.11
Maharashtra	466.00	546748.00	1.51	0.03
Manipur	0.00	0.00	0.00	0.00
Meghalaya	3.00	3200.00	0.13	0.00
Mizoram	0.00	0.00	0.00	0.00
Nagaland	2.00	6150.00	0.12	0.03
Orissa	101.00	291039.00	0.65	0.03
Punjab	422.00	1345193.00	8.38	0.28
Rajasthan	110.00	324226.00	0.32	0.15
Sikkim	1.00	2000.00	0.14	0.01
Tamil Nadu	148.00	238536.00	1.14	0.01
Tripura	11.00	29450.00	1.05	0.04
Uttar Pradesh	1589.00	10118000.00	6.66	0.40
Uttarakhand	15.00	68499.00	0.28	0.04
West Bengal	463.00	5682000.00	5.22	0.23
All India	5274.00	24311968.00	1.62	0.12

Source: Compiled from the data obtained from Directorate of Marketing & Inspection, Ministry of Agriculture, Govt of India, 2009, Faridabad.

Table- 3.15: Sector-wise availability of cold storage capacity (2005)

Sector	Number	Capacity (Lakh tonnes)
Private	4243 (89.10)	185.32 (94.60)
Cooperative	394 (8.28)	9.75 (4.98)
Public	125(2.62)	0.82 (0.42)
Total	4762(100)	195.89 (100)

Note: Figures in the parentheses are percentages of the total number and total capacity of storage units.

Source: Report of The Working Group on Agricultural marketing infrastructure and Policy Required for Internal and External Trade for The XI Five Year Plan 2007-12, Agriculture Division, Planning Commission, Government of India, January 2007

3.4.3 Standardisation and grading infrastructure

Grading and standardisation of agricultural commodities is a necessary step and of pivotal importance to attain efficient marketing. Realizing the importance of the grading and standardisation, a pioneer attempt has been made by the Central Government through an enactment of legislation “The Agricultural Produce (Grading and Marketing) Act, 1937”. Under this act, the grade standard has been notified for 200 agricultural and allied commodities so far. The commodities graded under this act bear AGMARK label on the products, which is an indication of purity and of quality goods. This grading and standardizing for agricultural and allied commodities is one of the important activities of the Directorate of Marketing and Inspection (DMI). The standards are framed on the basis of important quality parameters after analysis of an adequate number of representative samples of commodities from different producing areas and assembling centres over a period of time. The central and regional agmark laboratories provide analytical support for the programme. Purity standards under the provisions of the “Prevention of Food Adulteration (PFA) Act, 1954” and “Bureau of Indian Standards (BIS) Act, 1986” are invariably taken into consideration while framing the grade standards. International standards framed by Codex/ISO are also considered so that Indian products can compete in the international market (Govt. of India, 2010). The agmark standards are reviewed from time to time keeping in view the changes in production, consumers' preferences etc.

Grading is being undertaken at the traders and producers level both for internal consumption and for export. To facilitate grading, grading centres have been established only in 1321 regulated markets out of total 7161 regulated markets (Acharya, 2004). The trend of the quantity of agricultural produce graded over time is rising. But the quantity graded at producer's level is still almost negligible. There is a need to create facilities for cleaning, grading and packaging at primary level and also in the villages from where produces are brought for sale. In the absence of such facilities at the village, the kind of congestion and pollution increases at the market yard level.

The progress of grading in terms of value of commodities graded at different levels is shown in the table-3.16. The total value of agricultural commodities graded under the Act of 1937 was only worth of Rs. 18 crores in 1950-51. This increased over time and reached Rs. 437 crores in 1970-71, Rs. 6691 crores in 1990-91 and went up to Rs.9268 crores in 1989-99.

Though the directorate of marketing and inspection has made efforts to popularise grading at producer's level but a very small proportion of the produce sold by the farmers is graded before sale. Out of Rs. 62,000 crores worth of agricultural produce sold through the regulated markets during 1992-93, only 7.3 percent was graded products. Among the commodities graded at producer's level, cereals accounted for 50.7 percent, pulses 10.5 percent, oilseed 18.3 percent, cotton 3.4 percent in the total value of graded products (Acharya and Aarwal, 1994). During 2004-05, 6.62 million tonnes of agricultural produce and 26.1 crore pieces valued at Rs 6224 crore were graded at primary market level. Due to lack of proper handling (cleaning, sorting, grading and packaging) facilities at the village level, about seven percent of food grains, 30 percent of fruits and vegetables and 10 percent of spices are lost before reaching the market (Govt. of India, 2007).

Besides this, 956 laboratories (table-3.17) have been established for undertaking analysis, research and training of sponsored chemists. The spread of these laboratories as well as their availability per thousand sq. km is quite low (table 3.17). On an average not even one laboratory is available for serving an area of one thousand Sq. Km. On the other side, there are two laboratories available to serve one thousand tone of produce at all

India level. Such facilities are completely absent in all the NE states, Sikkim and Goa. On examination of information of laboratories in relation to produces it has been observed that their availability is much below the all India average in the states of West Bengal, Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Orissa, Punjab, Tamil Nadu and Uttaranchal.

The Department of Agriculture and Cooperation, Govt. of India has three organisations dealing with marketing under its administrative control, namely, the Directorate of Marketing and Inspection (DMI), Faridabad; Chaudhary Charan Singh National Institute of Agricultural Marketing (NIAM), Jaipur, and the Small Farmers Agri-Business Consortium (SFAC), New Delhi. The DMI's head office is at Faridabad (Haryana), and 11 regional offices are located in Delhi, Mumbai, Chennai, Kolkata, Hyderabad, Chandigarh, Jaipur, Lucknow, Bhopal, Kochi, and Guwahati. The Central agmark laboratory is located at Nagpur (Maharashtra). Besides these, there are 26 sub-offices and 16 Regional Agmark Laboratories (RALs) spread all over India (table-3.18)

Table-3.16: Value of agricultural commodities graded in India

(Rs. crores)

Year	Compulsory Grading	Voluntary Grading	Grading at Producers' Level	Total Value of Graded Products
1950-51	14.00	3.91	—	17.91
1955-56	24.93	15.96	—	40.89
1960-61	29.03	40.35	—	69.38
1965-66	56.70	80.00	64.16	201.16
1970-71	92.83	223.00	120.97	436.80
1975-76	237.22	201.92	375.72	814.86
1980-81	333.69	287.06	627.86	1248.61
1985-86	707.69	388.35	1221.93	2317.97
1990-91	902.58	1338.02	4450.53	6691.13
1998-99	90.34	3483.72	5693.91	9267.97
1999-2000	NA	NA	6710.37	NA

Source: Directorate of Marketing and Inspection, Ministry of Agriculture and Rural development, Government India, 2001, Faridabad.

Table-3.17: State-wise grading facilities in India

States	No. of Grading Labs	No. of Grading Labs Per '000	
		Sq.Km	MT
Andhra Pradesh	44	0.17	1.12
Arunachal Pradesh	-	0.00	0.00
Assam	-	0.00	0.00
Bihar	12	0.13	0.39
Chhattisgarh	2	0.01	0.20
Goa	-	0.00	0.00
Gujarat	43	0.22	1.75
Haryana	82	1.85	3.93
Himachal Pradesh	10	0.18	3.28
Jammu & Kashmir	46	0.21	9.82
Jharkhand	1	0.01	0.12
Karnataka	44	0.23	1.62
Kerala	52	1.34	7.80
Madhya Pradesh	46	0.15	1.62
Maharashtra	68	0.22	2.17
Manipur	-	0.00	0.00
Meghalaya	-	0.00	0.00
Mizoram	-	0.00	0.00
Nagaland	-	0.00	0.00
Orissa	6	0.04	0.33
Punjab	62	1.23	1.92
Rajasthan	209	0.61	8.67
Sikkim	-	0.00	0.00
Tamil Nadu	47	0.36	1.86
Tripura	-	0.00	0.00
Uttar Pradesh	153	0.64	2.09
Uttarakhand	5	0.09	1.39
West Bengal	24	0.27	0.58
All India	956	0.29	2.03

Source: Compiled from the data obtained from Directorate of Marketing & Inspection, Ministry of Agriculture, Govt of India, 2009, Faridabad

Table-3.18: Offices and laboratories of the Directorate of Marketing and Inspection

Regional Offices	Sub-Office under Regional Office	Agmark Laboratories under Regional Office
1. Delhi	1. Dehradun	1.Okhla 2.Ghaziabad
2. Kolkata	1. Patna 2. Bhubaneshwar 3. Ranchi	1.Kolkata 2.Patna 3.Bhubaneshwar
3. Mumbai	1. Nasik Road 2. Ahmedabad 3.Rajkot 4. Surat 5. Panaji 6. Pune 7.Sangli	1.Mumbai 2.Rajkot
4. Bhopal	1. Raipur	1.Bhopal
5. Chennai	1.Bangalore 2.Madurai 3.Hubli	1.Chennai 2.Bangalore
6. Kochi	1.Calicut 2.Thiruvananthapuram	1.Kochi
7. Hyderabad	1.Guntur 2.Vishakhapattanam	1.Guntur
8. Guwahati	1. Shillong	1.Guwahati
9. Lucknow	1.Kanpur 2.Varanasi	1.Kanpur
10. Jaipur	Nil	1.Jaipur
11. Chandigarh	1.Jammu 2.Amritsar 3.Abohar 4.Shimla	1.Amritsar

Source: Annual Report- 2009-10 Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India, March 2010

3.4.4 Marketing information network infrastructure

Market information is needed by farmers in planning production and marketing, and is equally required by other market participants in arriving at optimal trading decisions. The existence and dissemination of complete and accurate marketing information is the key to achieving both operational and pricing efficiency in the marketing system. A central sector marketing research and information network scheme was launched by the Department of Agriculture and Cooperation, Government of India, in March, 2000. The scheme aims at progressively linking important agricultural produce markets spread all over the country with State Agricultural Marketing Boards and the Directorate of Marketing and Inspection (DMI) for the effective exchange of market information. The

Agricultural Marketing Information Network (AGMARKNET) is being implemented jointly by the Directorate of Marketing and Inspection and National Informatics Centre (NIC), using National Information Network (NICNET) facilities available throughout the country. The objective of the scheme is to facilitate the collection and dissemination of information for better price realisation by the farmers. The information covers market, price, infrastructure and promotion related issues for efficient marketing. Wholesale prices and arrival information in respect of more than 300 commodities and 2,000 varieties are being disseminated through this network (<http://agmarknet.nic.in>) on a daily basis. More than 3,000 markets have been linked to the central AGMARKNET portal and more than 1,900 markets reported data during the month of January 2010 (Govt. of India, 2010).

The information of weekly and monthly prices movement and arrivals are also being disseminated by the AGMARKNET portal. Several other market related information like standards and grades, physical infrastructure for storage and warehousing, marketing laws, fees payable, commodity profiles etc are provided by this portal. Commodities already covered include rice, wheat, maize, jowar, red gram, Bengal gram, black gram, green gram, sunflower, mustard/rapeseed, groundnut, sesame, potato, soyabean and cotton. The portal provides information about schemes of the DMI, weather information, directories of markets etc. It provides weekly trend analysis for important markets in respect of major commodities. Besides spot prices, the portal also provides access to future prices. Further, it is constantly being enriched with various informations. Prices and arrival information are being disseminated in nine languages. The portal also serves as a single window and has linkages with various organisations concerned with agricultural marketing.

This AGMARKNET project networked 735 Agricultural Produce Wholesale Markets (APWMs), during 2000-02. Again, during the tenth five-year plan (2002–2007), 2000 additional markets are being networked. To start with, 810 AGMARKNET nodes have been established in the country during ninth five year plan period. This includes 735 agriculture produce wholesale markets, State Marketing Boards/Directorates (48) and DMI offices (27) spread all over the Country (Govt. of India, 2007). Under this scheme at present about 3011 AGMARKNET nodes (table-3.19) have been promoted in the country

so far. Out of these 92 percent have been promoted in the agricultural markets whereas remaining are used for monitoring and follow up. The availability of AGMARKNET nodes per thousand Sq. Km of area is not even one. However their availability per thousand tonnes of produce is six. Intensive efforts are required to expand the AGMARKNET nodes in the states of Assam, Bihar, Jharkhand, Manipur, West Bengal, Orissa, Punjab, Uttar Pradesh and Uttaranchal.

The AGMARKNET project has led to a nation-wide information network for speedy collection and diffusion of market information, computerisation of market related information ensuring regularity and reliability of data and increasing the efficiency in agricultural markets. AGMARKNET project has also been designated as one of the Mission Mode Projects of the Department of Information Technology (DIT), Government of India, and has won recognition nationally and internationally for effectively fulfilling the objective of speedy collection and dissemination of agricultural marketing information for better market access and price realisation by the farming community. It is hoped that in due course of time it would be an on-line marketing information service useful to all the stakeholders on agricultural marketing system of the country. It has an immense potential to service all the market participants to face the new challenges emerging out of liberalisation and globalisation of agricultural sector.

Table-3.19: State-wise agmark nodes in India

States	Agmark Nodes		
	Number (August 2010)	Per 1000 Sq.km	Per 1000 MT
Andhra Pradesh	334	1.28	8.50
Arunachal Pradesh	15	0.18	29.74
Assam	23	0.29	1.93
Bihar	58	0.62	1.91
Chhattisgarh	73	0.54	7.18
Goa	10	2.70	31.37
Gujarat	319	1.63	13.00
Haryana	150	3.39	7.20
Himachal Pradesh	39	0.70	12.79
Jammu & Kashmir	41	0.18	8.75
Jharkhand	26	0.33	3.03
Karnataka	171	0.89	6.29
Kerala	92	2.37	13.80
Madhya Pradesh	267	0.87	9.40
Maharashtra	346	1.12	11.06
Manipur	5	0.22	5.37
Meghalaya	11	0.49	11.53
Mizoram	9	0.43	24.34
Nagaland	14	0.84	17.17
Orissa	91	0.58	4.99
Punjab	199	3.95	6.17
Rajasthan	166	0.49	6.89
Sikkim	7	0.99	27.82
Tamil Nadu	190	1.46	7.54
Tripura	21	2.00	14.90
Uttar Pradesh	257	1.08	3.51
Uttarakhand	21	0.39	5.84
West Bengal	56	0.63	1.34
All India	3011	0.92	6.40

Source: Compiled from the data obtained from Directorate of Marketing & Inspection, Ministry of Agriculture, Govt of India, Faridabad.

3.5 An overview of efficiency of agriculture marketing system

Efficient marketing system is important for promoting agricultural business and raising the income levels of farmers which ultimately helps the economic development of the country. Generally, marketing efficiency is measured either as pricing efficiency or as

operational efficiency. Pricing efficiency is measured in terms of price series correlations and through co-integration analysis. Operational efficiency is measured in terms of relative size of marketing costs, net margins and gross marketing margins (GMM). A large no of studies have used the theory of producer's share in consumer's rupee for assessing marketing efficiency. Gross marketing margins (GMM) can be broken down in to three components viz., cost of performing various marketing functions, levies or statutory taxes payable in the marketing channel and net margins retained by market functionaries (Acharya, 2004). Marketing cost varies from commodity to commodity and channel to channel. Marketing cost is high for fruits, vegetables, flowers, oilseeds, sugarcane and cotton as compared to food grains (Agarwal, 1988). Various statutory charges including taxes, levies, market fees, octroi, special duty or cess etc. which are to be paid at different stages of marketing. The farmers and traders have no control on these, as these are statutory in nature. These cost components have considerable effect on gross marketing margins and farmer's share in consumer's rupee. Net marketing margin is the amount retained by different market functionaries. The size of net marketing margin depends on the nature of competition, structure of markets and scale of business. Larger the net marketing margin, greater is the inefficiency in the marketing system (Acharya, 1994).

Experts have done various studies on price spread and marketing margins of different agricultural produces. The results are summarised in table-3.20, 3.21 and 3.22. The results of these studies exhibit larger variability of the producer's share in the consumer's rupee as well as marketing margins across crops and areas. A comparative assessment of these results is not possible because of the difference in methodology adopted in these studies and non availability of results for the same crop, area and conditions at two points of time. The farmer's share in consumer's rupee has been estimated as 56 to 89 percent for paddy, 77 to 88 percent for wheat and 72 to 86 percent for coarse grain. For pulses and oilseeds, the farmer's share in consumer's ranged between 79 to 86 and 40 to 85 percent respectively. In the case of vegetables like potato, onion, brinjal, tomato, cauliflower etc the farmer's share in consumer's rupee has been estimated 39 to 69 percent (Acharya, 2004). The farmer's share in consumer's rupee for fruit product is generally lower has been estimated 34 to 57 percent. According to the various studies it is revealed that the producer's share in consumer's rupee has varied with the marketing

channel adopted by the farmers. Gross marketing margins decreased in food grains and oilseeds and increased in fruits and vegetables. The reason for this could be better competitive conditions for food grains and oilseeds and expansion in the markets for fruits and vegetables. The cost of marketing in absolute term has also increased over the period. The reasons for that are (i) expansion of market to distant location (ii) higher facility of transportation, communication and storage (iii) increased necessity of packaging of goods (iv) higher demand of processed, packed and branded goods and (v) increase in statutory marketing charges and the charges of marketing activities.

The directorate of Marketing and inspection (DMI) has estimated cost and margins of a number of agricultural commodities. According to the study (table-3.23) the cost and margins account for 12 to 36 percent of consumer's price in oilseed crops, 45 to 55 percent in fruit and vegetables and 30 to 35 percent in food grains. The study further stated that the margins were higher when farmers adopted private channels in marketing of surplus produce compared to the institutional channels hence farmer's share was lower when they sell through private channels (Bhat, 1996). There is no comprehensive study available which analysed the breakup of gross marketing margins into its three important components to show the light on the efficiency of the marketing system for agricultural commodities. Based on the indirect evidence available, it appears that statutory charges account for 12 to 18 percent and net marketing margins accounts for 15 to 30 percent of the gross marketing margins. Remaining 52 to 77 percent is the real cost of performing various marketing functions (Acharya, 2004). Marketing efficiency can be increased by reducing cost of marketing and margins of the channel members.

Table-3.20: Price Spread in food grains in India

(Percentages)

Crops	Year	Area of Study	Producer's Share in Consumer's rupee	Percentage of Consumer's Rupee			Reference
				Gross Marketing Margin	Marketing Costs	Net Marketing Margin	
Rice	1959-60	Madhya Pradesh	76.0	24.0	11.6	12.4	Singh, lakshman (1962)
	1976-77	Haryana	56.0	44.0	14.3	29.7	Goel & Gangwar (1978)
	1976-77	Bihar	81.9	18.1	6.3	11.8	Ghosh (1987)
	1984-85	Bihar	88.9	11.1	3.7	7.4	Ghosh (1988)
	1988-89	Bihar	74.5	25.5	13.5	12.0	Sunil Kumar (1994)
Paddy	1995-96	Haryana	67.3 to 71.7*	28.3 to 32.7*	7.8 to 15.4*	12.9 to 24.9*	Rai & Gangwar (1997)
Wheat	1966-67	Haryana	77.0	23.0	2.0	21.0	Kahlon, <i>et. al.</i> (1069)
	1969-70	Rajasthan	88.0	12.0	6.0	6.0	Singh, R.V <i>et. al.</i> (1975)
	1971-72	Gujrat	78.0	22.0	6.0	16.0	D.S. Thakur (1974)
	1976-77	Bihar	77.5	22.4	6.7	15.6	Ghosh (1988)
	1984-85	Bihar	83.5	16.5	5.2	11.3	Ghosh(1988)
	1995-96	Haryana	77.0 to 86.7*	13.3 to 23.0*	10.9 to 20.6*	2.4 to 7.3	Rai & Gangwar (1997)
Jower	1971-72	Gujrat	74.0	26.0	7.0	19.0	Thakur D.S. (1974)
Bajra	1971-72	Gujrat	72.0	28.0	6.5	21.5	Thakur D.S.(1974)
	1983-84	Gujrat	76.6 to 78.6*	21.4 to 23.4*	7.9 to 8.1	13.5 to 15.3	Raju & Marakana (1988)
Maize	1976-77	Bihar	81.1	18.9	5.9	13.0	Ghosh (1988)
	1984-85	Bihar	83.1	16.9	5.0	11.9	Ghosh (1988)

* Varies as per marketing channel adopted in sale

Source: Acharya, 2004

Table-3.21: Price Spread in oilseeds, fruits and vegetables in India

(Percentages)

Crops	Year	Area of Study	Producer's Share in Consumer's rupee	Percentage of Consumer's Rupee			Reference
				Gross Marketing Margin	Marketing Costs	Net Marketing Margin	
<u>Oilseeds</u>							
Groundnut	1964-66	Punjab	65.0	35.0	14.5	20.5	Kahlon, A.S. (1968)
	1983-84	Andhra Pradesh	56.4-60.2*	39.8-43.6*	13.4-14.7*	26.4-28.9*	Bhalerao, <i>et al.</i> (1987)
	1995-96	Haryana	40.0	60.0	16.0	44.0	Rai & Gangwar (1997)
Rapeseed & Mustered	1995-96	Haryana	77.2- 84.2*	15.8-22.8*	15.2-18.5*	0.6-4.3*	Rai & Gangwar (1997)
<u>Fruits</u>							
Banana	1984-85	Andhra Pradesh	45.4-57.1*	42.9-54.6*	28.3-28.0*	14.6-26.6*	Raju & Venkateswarlu (1989)
Apple	1984-85	Himachal Pradesh	33.6-41.9*	58.1-66.4*	44.8-47.3*	13.3-19.1*	Sikka & Vaidya (1987)
	1984-85	Punjab	36.3-36.6*	63.4-63.4*	34.8-39.0*	24.4-28.6*	Kainth (1987)
	1991-92	Himachal Pradesh	42.0	58.0	43.3	14.7	Saraswat (1994)
<u>Vegetables</u>							
Potato	1985-86	Karnataka	60.5-67.5*	32.5-39.5*	13.1-13.8*	19.4-25.7*	Kiresur, <i>et al.</i> (1989)
Cauliflower	1991-92	Himachal Pradesh	46.1	53.9	26.7	27.2	Thakur, D.S. (1994)
	2005-06	Chhattisgarh	39.13-50.00*	38.47-32.88*	22.4-10.85*	16.07-22.03*	Singh & Banafar (2006)
Peas	1991-92	Himachal Pradesh	48.0	52.0	24.1	27.9	Thakur, D.S. (1994)
	1992-93	Bihar	47.0-67.9*	32.1-53.0*	—	—	Madan & Singh (1997)
Capsicum	1991-92	Himachal Pradesh	52.5	47.5	31.9	15.6	Thakur, D.S. (1994)
Tomato	1985-86	Karnataka	52.3-53.1*	46.8-47.3*	10.0-12.5*	34.3-37.3*	Kiresur, <i>et al.</i> (1989)
	1991-92	Himachal Pradesh	46.4	53.5	31.8	21.7	Thakur, D.S. (1994)
Brinjal	1985-86	Karnataka	48.7-50.4*	49.6-51.3*	9.0-12.8*	38.5-40.6*	Kiresure, <i>et al.</i> (1989)
	1999-00	Maharastra	68.28-53.14*	21.4-37.06*	9.68-9.80*	11.78-17.26*	Chole, <i>et al.</i> (2003)

* Varies as per marketing channel adopted in sale

Source: Acharya, 2004

Table-3.22: Price Spread in onion, cotton, tobacco and pulses in India

(Percentages)

Crops	Year	Area of Study	Producer's Share in Consumer's rupee	Percentage of Consumer's rupee			Reference
				Gross Marketing Margin	Marketing Costs	Net Marketing Margin	
Onion	1985-86	Karnataka	62.3-63.5*	36.5-36.8*	15.5-17.3*	19.2-21.3*	Kiresur <i>et. al.</i> (1989)
Cotton	1985-86	Tamil Nadu	60.0-74.0	26.0-40.0	—	—	Ramamoorthy (1987)
	1986-87	Tamil Nadu	68.9-74.4*	25.6-31.1*	—	—	Despande, <i>et. al.</i> (1990)
	1986-87	Punjab	66.3-66.8*	33.2-33.7*	31.9-32.2*	1.3-1.5*	Mann & Gill (1988)
Tobacco	1991-92	Bihar	45.0-56.5*	43.5-55.0*	3.1-4.1*	40.4-50.9*	Singh, <i>et. al.</i> (1994)
Pulses							
Chick Pea	1966-67	Haryana	81.0	19.0	4.5	14.5	Kahlon & Pandey (1969)
	1967	Panjab	86.0	14.0	3.5	10.50	Gill & Johl (1969)
Gram	1969	Punjab	79.3-95.0*	5.0-20.7*	5.0-6.6*	0-14.1*	Gill & Johl (1969)
	1995-96	Haryana	84.4	15.2	9.2	6.0	Rai & Gangwar (1997)

* Varies as per marketing channel adopted in sale.

Source: Acharya, 2004

Table-3.23: Price Spread in private and institutional channels in selected agriculture commodities in India

(Percentages)

Commodities	Year	Marketing Channel	Farmer's Share	Marketing Costs	Marketing Margins
Rice	1982-83	Private	65.0	17.7	17.3
		Institutional	66.0	27.0	7.0
Wheat	1982-83	Private	65.8	20.0	14.2
		Institutional	66.8	27.5	5.7
Apple	1982-83	Private	41.9	35.0	23.1
		Institutional	52.2	26.2	21.6
Onion	1982-83	Private	40.6	35.7	23.7
		Institutional	42.2	36.1	21.7
Groundnut	1982-83	Private	66.6	19.0	17.5
		Institutional	87.6	11.2	1.2

Source: Directorate of Marketing and Inspection, Government of India, 1985, Faridabad

3.6 Agriculture markets in India – A review

Markets for agricultural produce may broadly be divided into three categories; primary market, wholesale market and terminal market. Wholesale markets are subdivided into primary wholesale market and secondary wholesale market. Primary wholesale markets are periodically held, either ones or twice a week. Agricultural produce comes from neighbouring villages. These markets deal in the sale of fruits, vegetables, food grains, all household requisites etc. Secondary wholesale markets are also known as mandis. These are situated generally at subdivision or district headquarters. Small merchants purchase from primary wholesale market and sell in this market. Some cultivators directly sell their produce in these markets. Terminal markets are the markets in which the produce is either finally disposed off direct to consumer or processors or assemble for export. These markets are the part where warehouses and storages are available. Farmers are always interested to sell their produce at good market, which provides them with high profit. But due to less developed market infrastructure, lack of market information and poor storage, small and marginal growers are compelled to sell their produce within the village area to local merchants or aratdars and get lesser price of their produce.

Rural primary markets are located in rural and interior areas and serve as focal point to a great majority of the farmers. Most of the small and marginal farmers use this market for marketing their produce and for purchase of their consumption needs. These markets, which also function as collection centres for adjoining secondary markets, are devoid of most of the basic marketing infrastructure facilities. In rural areas, a weekly market is the first link in the marketing channel for maximum small and marginal farmers and the price they receive at this market constitute their cash income. It is estimated that 90 percent of the total marketable surpluses in the remote areas are sold through these markets. Number of studies has shown that the efficiency of rural markets is poor due to number of problems, such as the high degree of congestion at market yards, less number of traders and non-availability of supporting services. This, in turn, affects the market turn over. Rural primary markets play a very vital role in marketing of produces, particularly of small and marginal farmers. Large farmers with higher surpluses generally take their produce to nearby wholesale assembling markets. At times, they purchase surpluses from other small farmers and carry the same along with their produce to the assembling

markets for disposal. The small cultivators with limited surplus find it uneconomical to go to wholesale assembling markets located at long distances from their villages.

According to the report of Marketing and Research Team (MART), on “Traditional Haats and Melas in India”, a study sponsored by the Ministry of Rural Development, Government of India, during 1995, it is estimated that there are 47,000 haats of which 75 percent are held once a week, 20 percent twice a week and 5 percent are held daily. The study indicated that, on an average, one haat caters to approximately 14 villages. The relationship between the distribution of villages according to population or range and the availability of haats, smallest villages (population less than 500) held the fewest haats (only 1.6 percent). Majority of haats (47.9 percent) are held in big villages (those with a population of over 5000 persons). The study revealed that nearly two third of the haats are held at a distance of 16 kms, 23 percent are held at 6 to 15 kms distance and 9 percent within a distance of 1 to 5 kms. The amenities and facilities available in these haats are far from satisfactory (Government of India, 2007)

The wholesale/assembling markets or the secondary markets numbering 6503 constitute the cardinal link in the market structure of the country. Although better organised than the rural primary markets, these markets present divergent picture with regard to facilities offered and services provided. Most of these are located in the subdivision and district headquarters, important trade centres and nearby railway stations and perform assembling and distribution functions. In most of these markets, a large number of commodities are traded. Specialised single commodity markets are not many except few markets for cotton, jute, oilseeds, fruits and vegetables. Terminal markets are located nearer to big cities and terminal points providing the final link in the market structure and sellers are usually the traders and not the growers in these markets unlike the primary and secondary markets. The terminal market concept promoted in India is expected to link the farmers to this markets directly through collection centres (Singh and Yadav, 2010).

Agricultural produce regulated markets have been playing a major role in the smooth distribution of food grains, oilseeds, fiber crops, fruits and vegetables to meet the supply and demand needs of the farmers, traders, processors and consumers of the state. The research studies revealed that farmers on an average gets 8 to 10 percent higher price and higher share in the consumer's rupee by selling their produce in the regulated markets compared to rural, village and unregulated wholesale markets (Acharya, 2004). The

benefits got by the farmers by sale of agricultural produce in the regulated market varies from area to area because of the variation in the spread of regulated markets over the regions and the existence of necessary infrastructural amenities/ facilities in these regulated markets.

In India, at the end of 1950, there were 286 regulated markets but the number increased to 4446 in 1980, 7161 in 2001, and 7566 in 2008. After 2006 all most hundred percent of the Whole sale markets are functioning under the regulation programme (table-3.24). The progress of regulated markets is not uniform in all the states. Majority of the states has enacted the Agricultural Produce Market Acts. The state-wise status of regulated markets is presented in table-3.25. The number of regulated market is relatively more in states of Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Uttar Pradesh, and West Bengal. The act of regulated markets is not yet implemented in the states of Kerala, Manipur, Mizoram and three Union Territories like Andaman & Nicobor Island, Dadar & Nagar Haveli and Lakshadweep. The advent of regulated markets has helped in mitigating the market handicaps of producers/sellers at the wholesale assembling level. But the rural periodic markets in general remained out of its developmental ambit. Small cultivators with limited surplus find it uneconomical to go to wholesale assembling markets located at long distances from their villages.

Table-3.24: Number of agricultural produce markets in India

Period	Number of Regulated Markets	Regulated Markets as percent of Total Wholesale Assembling Markets
End of 1945	146*	2.00
End of 1950	286*	3.92
March, 1956	470*	6.44
March, 1961	715*	9.80
March, 1966	1,012*	13.88
March, 1974	1,777*	24.37
March, 1976	3,528	48.38
March, 1980	4,446	60.96
March, 1985	5,695	78.09
March, 1990	6,217	85.25
March, 1995	6,836	93.73
March, 2001	7,161	98.19
March, 2006	7,566	Almost 100
March, 2008	7,566	Almost 100

Note: * Represents only Principal Markets.

Source: Manual on Agricultural Prices and Marketing, Government of India, October, 2010 Ministry of Statistics and Programme Implementation, Central Statistics Office, New Delhi

Table-3.25: Number of wholesale assembling, rural primary and regulated markets in states of India (As on 31.03.2008)

Sr. No	States/Union Territories	Number of Markets			Regulated Markets		
		Whole Sale	Rural Primary	Total	Principal	Submarket Yards	Total
1	Andhra Pradesh	314	577	891	314	577	891
2	Arunachal Pradesh	6	56	62	14	48	62
3	Assam	405	735	1140	20	204	224
4	Bihar #	325	1469	1794	95	431	526
5	Jharkhand	205	603	808	28	173	201
6	Goa	4	24	28	1	7	8
7	Gujarat	207	129	336	196	218	414
8	Haryana	284	187	471	106	178	284
9	Himachal Pradesh	42	35	77	10	32	42
10	Jammu & Kashmir*	26	8	34	-	-	-
11	Karnataka	498	730	1228	146	352	498
12	Kerala*	348	1014	1362	-	-	-
13	Madhya Pradesh	237	1321	1558	237	264	501
14	Chhattisgarh	2	1132	1134	73	108	181
15	Maharashtra	880	3500	4380	295	585	880
16	Manipur*	20	98	118	-	-	-
17	Meghalaya	101	112	213	2	-	2
18	Mizoram*	10	105	115	-	-	-
19	Nagaland	8	144	152	-	Nil	-
20	Orissa	398	1150	1548	45	269	314
21	Punjab	437	0	437	145	292	437
22	Rajasthan	428	312	740	125	303	428
23	Sikkim	7	12	19	1	-	1
24	Tamil Nadu	300	677	977	277	15	292
25	Tripura	89	559	648	21	-	21
26	Uttar Pradesh	584	3244	3828	245	342	587
27	Uttarakhand	20	29	49	25	31	56
28	West Bengal	279	2925	3240	43	641	684
29	A & N Island*	0	0	0	-	-	-
30	Chandigarh	1	0	1	1	-	1
31	D & N Haveli*	0	0	0	-	-	-
32	Daman & Diu	0	0	0	Nil	Nil	Nil
33	Delhi	30	0	30	9	14	23
34	Lakshadweep*	0	0	0	-	-	-
35	Puduchery	8	0	8	4	4	8
	Total	6503	20887	27390	2478	5088	7566

Note: * APMR Act not yet implemented

Bihar Agriculture Produce Marketing (Regulation) Act repealed from 1st September, 2006.

In Bihar and West Bengal sub yards include cold storages and hence figures of total regulated markets and wholesale markets are not comparable.

All principal regulated markets are wholesale markets, whereas sub market yards may / may not be a wholesale market as it also includes some of Rural Primary Markets notified for regulation.

Source: Manual on Agricultural Prices and Marketing, Govt. of India, October, 2010, Ministry of Statistics and Programme Implementation, Central Statistics Office, New Delhi

The area served by each regulated market across the states has been observed large variation (table-3.26). The area covered per regulated market varies from 62 Sq. km in Puduchery to 11215 sq. km. in Meghalaya. On an average, each regulated market in the country served an area of 434 sq. km. The area served per market yard is as high as 11215 sq. km. in Meghalaya, 7,096 sq. km. in Sikkim, 1351 sq. km. in Arunachal Pradesh and 1326 sq. km. in Himachal Pradesh. The studies have shown that increase in the density of markets has positive impact on agricultural productivity. Most of the regulated markets at present still awfully lacks facilities for handling produce as less space for auction platform, inadequate number of shops and godowns in the premises etc. and hence reduces the effective participation of traders. Absence of storage godowns at market level further perpetuates the problems of traders in general and continuous movement of goods in particular.

Table- 3.26: State-wise area served by regulated market

Sr No	States/Union Territories	Geographical Area (km ²)	Regulated Market (as on 31.03.2008)	Area Covered by Each Market (km ²)
1	Andaman & Nicobar Islands	8,249	-	-
2	Andhra Pradesh	2,75,068	891	308.71
3	Arunachal Pradesh	83,743	62	1,350.69
4	Assam	78,483	224	350.37
5	Bihar	94,164	526	179.01
6	Chandigarh	114	1	114.00
7	Chhattisgarh	1,35,194	181	746.92
8	Dadra & Nagar Haveli	491	-	-
9	Daman & Diu	122	-	-
10	Delhi	1,483	23	64.47
11	Goa	3,702	8	462.75
12	Gujarat	1,96,024	414	473.48
13	Haryana	44,212	284	155.68
14	Himachal Pradesh	55,673	42	1,325.54
15	Jammu and Kashmir	2,22,236	-	-
16	Jharkhand	79,700	201	396.51
17	Karnataka	1,91,791	498	385.12
18	Kerala	38,863	-	-
19	Lakshadweep	32	-	-
20	Madhya Pradesh	3,08,144	501	615.05
21	Maharashtra	3,07,713	880	349.67
22	Manipur	22,327	-	-
23	Meghalaya	22,429	2	11214.50
24	Mizoram	21,081	-	-
25	Nagaland	16,579	-	-
26	Orissa	1,55,707	314	495.88
27	Puduchery	492	8	61.50
28	Punjab	50,362	437	115.24
29	Rajasthan	3,42,236	428	799.61
30	Sikkim	7,096	1	7,096.00
31	Tamil Nadu	1,30,058	292	445.40
32	Tripura	10,492	21	499.62
33	Uttar Pradesh	2,38,566	587	406.41
34	Uttarakhand	53,566	56	956.53
35	West Bengal	88,752	684	129.75
36	All India	32,87,300	7,566	434.48

Source: Manual on Agricultural Prices and Marketing, Govt. of India, October, 2010
 Ministry of Statistics and Programme Implementation, Central Statistics Office,
 New Delhi

Direct marketing by farmer is being encouraged as an innovative channel. Various State Governments initiated a process of direct marketing by producers to the consumers in the country by initiating the concept of Apni Mandi (Punjab), Rythu Bazar (Andhra Pradesh), Uzahaver Shandies (Tamil Nadu), Shetkooori Bazars (Maharashtra), Krushak Bazaars (Orissa) and Hadaspar Vegetable Market (Pune). But these markets have been promoted so far only at the state headquarter and some district headquarters adjoining to the state. These channels are mostly adopted in sales transactions of agricultural commodities like fruits, vegetables and flowers which are highly perishable. In this channel, the produce move quickly from farmers to consumers due to lack of middlemen. If farmers directly sell their produce to the consumers, it not only saves losses but also increases farmers' share in the price paid by the consumer. Farmers' markets were introduced with a view to eliminate the middlemen and arrange facilities for the farmers to sell their produce directly to the consumers at reasonable rates. On account of the scheme, both the farmers and the consumers are benefited.

Apni Mandi in Punjab and Haryana

Punjab's and Haryana's Apni Mandi (our market), established in the mid-1990s, and were the first ones directly linking vegetable producers and consumers. Farmer producers bring the produce for sell directly to the buyers or consumers. The Agricultural Produce Market Committee (APMC) of the area where Apni Mandi is located provides all necessary facilities like space, water, shed, counters and weighing balances. Agricultural Produce Market Committee obtains financial assistance from State Agricultural Marketing Board (SAMB) for extending various services to the buyers and sellers. The major thrust of Apni Mandi system is to provide business strategy to the farmers. The first Apni Mandi in Haryana was established at Karnal in 1988 and the Punjab Mandi Board set up first Apni Mandi in February 1987 at Chandigarh.

Rythu Bazars in Andhra Pradesh

The Rythu Bazars were initiated by the Government of Andhra Pradesh on January 26, 1999. There are 102 numbers of Rythu Bazars covered nearly 40,000 farmers of 2,800 villages in all the district head-quarters and important cities in Andhra Pradesh (Govt. of India, 2007). Rythu Bazars are located on government lands identified by the district collectors. The locations are decided in such a way as are convenient to both for the

farmers and consumers. The price fixation of produces in Rythu Bazars is through a committee of farmers and the estate officer. Adequate care is taken to fix the prices reasonably. If the prices in Rythu Bazars are higher than the local market rate, there is no incentive to consumers. And if the prices fixed are lower than the wholesale market rates, there are no incentives to farmers. The prices in Rythu Bazars are generally 25 percent above the wholesale rates and 25 percent less than the local retail price. The maintenance expenditure of Rythu Bazaar is being met from the financial sources of Agricultural Produce Market Committees. In general producer's share in consumer's rupee is more by 15 to 40 percent in Rythu Bazar because marketing costs are at minimum level as middlemen are completely eliminated from marketing activities (Reddy and Raju, 2000).

Uzhavar Sandies in Tamil Nadu

The state government of Tamil Nadu established Uzhavar Sandies (farmers markets) in selected municipal and panchyat areas of the state. In these markets, farmers enjoy better marketing infrastructure free of cost and receive considerable high price for the products than what they used to receive from middlemen at primary markets. Farmers are additionally benefited from the interaction with other farmers and with departmental personnel. Farmers also get good quality seeds and other inputs in the market yard itself. (Rajandra, 2000). 102 Markets were established within March 2001. These markets are under the administrative control of the State's Agricultural Marketing Committees, which in turn are part of the agricultural marketing department. The committees are also responsible for the administration of regulated markets, where farmers sell directly to traders without the intermediary of commission agents and under a tender system supervised by committee officials. The committees are responsible for their overall administration. The price of the produces is fixed each day by a committee including marketing committee officials and farmers' representatives. Prices are displayed on a blackboard at each stall. Farmers are not permitted to sell above the maximum price, although they are allowed to sell at a lower price

Krushak Bazars in Orissa

Government of Orissa established 40 Krushak Bazars in the state in 2000-01 with the purpose to empower farmers to compete effectively in the open market to get a remunerative price for their produce. Government provides incentives for the purpose of

establishing the bazaar which includes one or two acres of government land with all the infrastructure in the identified urban/semi urban area. The farmers are identified and provided marketing facilities. The identified farmers are supplied with required inputs at the reasonable price. In addition, storage and public utility facilities are also provided. The comparison of prices in wholesale market, Krushak Bazar and retail market indicated that the prices were 4 to 41 percent higher in Krushak Bazar than the wholesale market price. However in case of retail market, the prices were lower by 10 to 32 percent in the Krushak Bazar. The price fixation process rarely involved farmers in the decision making (Govt. of India, 2007)

Hadaspar Vegetable Market in Pune

Hadaspar vegetable market is a model market for direct marketing of vegetables in Pune city. This sub-market yard situated near Pune under Pune Municipal Corporation and fee for using the space in the market is collected by the Municipal Corporation from the farmers. This is one of the ideal markets in the country for marketing of vegetables. In this market, there are no commission agents/middlemen. Buyers purchase vegetables in a lot size of 100 kgs or 100 numbers. The produce is weighed in the presence of licensed weigh men of the market committee and sale bill is prepared. The purchasers make direct payment in cash to the farmer. Disputes are settled by the supervisor of the market committee after calling the concerned parties. The market committee charges one percent sale proceeds as market fee for the services and facilities. A common problem faced by the direct market systems is the infiltration of the bazaars by middlemen in the guise of farmers (Mishra, 1992).

Besides above, some alternative marketing methods have also been taken to facilitate agriculture marketing. License for direct marketing has been granted to M/S Aditya Birla Retail Ltd, Ruch Soya Industries etc in Maharashtra, Borsad Agro Marketing Pvt. Ltd., Reliance Agri Products Distribution Pvt. Ltd., Reliance Fresh, etc in Gujarat, ITC e-choupal in Madhya Pradesh and Rajasthan Haryali Kisan Bazar in Uttar Pradesh.

3.7 Marketing institutions

Agriculture marketing institutions act as a stimulating and dynamic force in agriculture marketing from long back. A number of institutions have been established from time to time to keep pace with the expanding and changing needs of agricultural sector. Depending on the objectives and role, these marketing institutions can be grouped into public sector organisation, cooperative and other formal/informal bodies (Acharya, 1997b, 2004). The role and functions of these institutions differ from each other which include policy formulation, implementation, supervision, facilitation and direct entry in the market etc.

Public sector organisations include State Agricultural Marketing Boards (SAMB), Agricultural Produce Market Committees (APMC), Central Warehousing Corporation (CWC), State Warehousing Corporations (SWCs), Food Corporation of India (FCI), Cotton Corporation of India (CCI), Jute Corporation of India (JCI), Specialized Commodity Boards, Agriculture and Processed Food Export Development Authority (APEDA), State Trading Corporation (STC), Commission for Agricultural Costs and Prices (CACP), Directorate of Marketing and Inspection (DMI), Departments of Food and Civil Supplies, Council of State Agricultural Marketing Boards (COSAMB) etc. APMCs were established to supervise and control the regulated markets in the state. State Agricultural Marketing Board (SAMB) is an organisation which provides guidance to Agriculture Produce Marketing Committees and Governments. The main functions of SAMBs are supervising marketing committees, create market infrastructural facilities, and provide training, research and development in agriculture marketing. Central Warehousing Corporation (CWC) and State Warehousing Corporations (SWCs) provide scientific storage facilities in the country. The CWC has created warehouses at the places of importance in all India level where as SWCs have performed similar activities in the state level. The main functions of Food Corporation of India are to procure, storage and distribution of food grains on behalf of governments and undertakes the price support operation to protect the interest of the growers. The Cotton Corporation of India (CCI) was established for purchasing and distribution of raw cotton to safeguard the interest of growers and consumers. The main function of Jute Corporation of India (JCI) is to ensure jute growers by offering support price for their produce and protect them from marketing

intermediaries. Specialised Commodity Boards perform various functions relating to production, processing and marketing of concerned crops. The main objectives of Agriculture and Processed Food Export Development Authority (APEDA) are to organise agriculture export and allied activities. The Commission for Agricultural Costs and Prices (CACP) was setup to formulate price policies for selected agricultural commodities. The major activities of Directorate of Marketing and Inspection (DMI) are to conduct market survey, research, and training and suggest policy matters related to agricultural marketing. The Council of State Agricultural Marketing Board (COSAMB) was established to coordinate the activities of different state agricultural marketing boards.

On the other hand cooperative marketing societies perform a crucial role in development of agriculture marketing. These cooperative organisations have been promoted for undertaking marketing and processing functions on behalf of the farmers or its members. There are various types of cooperative societies. Some of them namely primary agricultural cooperative marketing societies and district level cooperatives are function at base level. Apart from these, State Cooperative Marketing Federations work at state level. There are some other cooperative societies perform at national level include National Agricultural Cooperative Marketing Federation (NAFED), Tribal Cooperative Marketing Federation (TRIFED), Special Commodity Cooperative Marketing Organisation (Sugarcane, Cotton, Milk) etc. NAFED as an apex organization of marketing cooperatives was established in October 1958 to strengthen cooperative marketing structure in the country. NAFED has enlarged the scope of its membership to district, regional and primary marketing societies (NAFED, 1983). The major objectives of NAFED are to coordinate and promote the marketing activities, international trade in agricultural and make arrangements for the supply of agricultural inputs required by its member cooperatives. NAFED is also act as an agency of the government for purchase, storage and distribution of agricultural products and inputs. TRIFED was established in 1987 to develop the system of marketing of forest products produced by the tribes in the country. TRIFED arranges marketing and export of minor forest products produced by the tribes in tribal dominated areas and protects the tribes from exploitation by the private traders (Acharya, 2004). The government has also established National Cooperative Development Corporation (NCDC) to promote cooperative societies. The cooperative organisations have played an important role in improvement of the performance of

marketing system. They have contributed in not only marketing and processing of farm products, but also in supply of inputs, including credit to farmers.