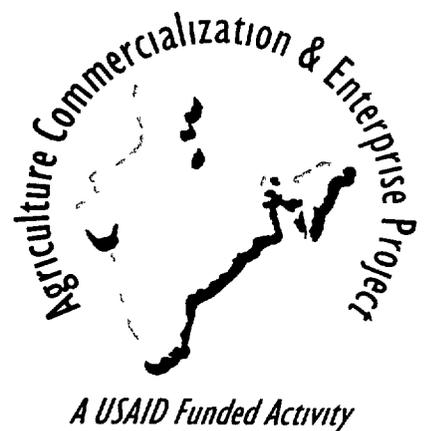


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**MAHARASHTRA  
AGRICULTURAL MARKETING INFRASTRUCTURE  
SITUATION REPORT**



*Prepared by*  
**S R Salunke**  
**CHEMONICS-ACE PROJECT**  
*A USAID Funded Activity*  
New Delhi, India



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# MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE SITUATION REPORT

*Prepared by*

**CHEMONICS-ACE PROJECT**

*Funded by USAID*

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## **EXECUTIVE SUMMARY**

This report reviews marketing infrastructure for horticulture products in Maharashtra State. The report was prepared as background information to the Expert Panel on Marketing Infrastructure. The report focuses on the key infrastructure constraints to sustained growth of horticulture in the state.

The Expert Panel is sponsored by the USAID/India - ICICI ACE Project, being implemented by Chemonics International. After 5 years of operation, USAID concluded that Indian horticulture firms and farmers are producing excellent quality in large volumes. However, there are some severe problems getting produce to markets. Many of the problems require well-coordinated action by multiple agencies, including both state and Central Government agencies. In addition, it has become clear that marketing infrastructure needs strong private sector support.

The purpose of the report is to provide an initial diagnosis of the key marketing infrastructure constraints. It will be discussed in the first two Expert Panel meetings to be held in February and April, 1998. We include the full range of marketing infrastructure important for horticulture industry, including field chilling, pack houses, transport, cold storage, terminal markets, ports, and airports.

**KEY FINDINGS**

Following is a summary of the key findings of the report

- ▶ **Maharashtra is a F&V powerhouse** Its production is increasing quickly  
Farmers are technically sophisticated and innovative
- ▶ **Maharashtra's horticulture serves four markets, each with its own marketing needs**

MARKET	CURRENT NEEDS
Local consumption	Improved varieties, harvest, packaging, storage & transport
Major urban markets Mumbai, Pune	Improved varieties, harvest, packaging, storage & transport
Regional high value markets Calcutta, Bangalore, Ahmedabad, Vadodra, Madras	Same as above, plus cold chain
Exports	More efficient public markets, ports and airports

- ▶ **Current market channels are well developed and are becoming sophisticated** But there are several weak areas in the marketing chain that seriously constrain growth and reduce farm incomes A huge potential income is lost due to agricultural marketing infrastructure constraints
- ▶ **A key issue in Maharashtra is the operational efficiency of existing infrastructure** For exports, timely clearance from security, customs and phytosanitary agencies is difficult Breaks in cold chain at ports and airports also cause serious loss of value for perishables Limited capacity of X-ray facilities for screening produce at the airports which delays loading and degrades the quality of produce due to thermal shock Improper handling at ports and airports is also a constant problem Attitudes of personnel who work with perishable cargos are poor  
For domestically marketed goods, there are many "operational" factors that add costs and slow transit of produce on the route from farm gate to market Octroi post stops delay reefer trucks when they pass through the cities and towns enroute to mandis, ports and airports Volume at mandis are increasing and hence generally very congested

## MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE STATUS

- ▶ **Low standards of post harvest handling, grading and packing even with the existing infrastructure** Farmers and traders are not aware of many improved post harvest practices. This is a problem particularly at the village and cooperative level. Poor post harvest practices result in much lower prices to farmers.
- ▶ **Poor performance of key wholesale markets** Larger mandis are congested and do not have adequate facilities for grading, packing and cold storage. They also have a chronic problem with financial sustainability. The opportunity for "value adding services" at major mandis is not being developed.
- ▶ **Insufficient coordination between government agencies concerned with agricultural marketing infrastructure** Many agencies are responsible for the construction and operation of agricultural marketing infrastructure. These include the State Agricultural Marketing Board, Maharashtra State Warehousing Corporation, various cooperative federations, Bombay Port Trust, Airport Authority of India, Customs, Airport Security, Air India, and others. These agencies do not coordinate to develop perishable facilities.
- ▶ **There are several major opportunities for agricultural marketing infrastructure development**
  - ▶ Substituting private (and cooperative) investment in modern packhouses, cold stores and cold transport in place of public investment.
  - ▶ Making municipal markets more efficient and financially sustainable.
  - ▶ Ensuring that physical infrastructure for perishables at Maharashtra's major port and airports is available, and properly managed.
  - ▶ Removing operational and administrative barriers related to stops on the road, ports and mandis.
  - ▶ Improving post harvest handling, packing and packaging standards at village and mandi level through effective extension services.
  - ▶ Maharashtra's public agricultural marketing infrastructure programs need to be reviewed for efficiency and sustainability. A large amount of public resources are invested in agricultural marketing infrastructure, with no cost recovery.
- ▶ **Private sector horticulture industry firms say that "drag" factors are major problems for their business** There is an urgent need to analyze the impact of these factors on the growth of the industry. This can be done quickly and cheaply through a series of "benchmark analyses" of ports, airports, mandis and key trade routes.

**BACKGROUND**

Maharashtra State plays a major role in India's horticulture industry. Maharashtra produces 12% of India's fruits and 10% of vegetables. Maharashtra's share of India's total exports of fresh vegetables and fruits is 30%, of processed fruits and vegetables it is nearly 50%. It is estimated that Maharashtra produces 65% of total Indian flower exports. Maharashtra is a true "powerhouse" in horticulture production and marketing.

Mumbai ports and airport are principal export points for high value produce from north and western India bound for the Middle East, East Asia and Europe. The Mumbai metropolitan area is also a huge consumer of horticulture products.

The state has been increasing production through promotional programs for horticulture and floriculture. Trends for important fruits, with projections based on Department of Horticulture data, is given below.

<b>Fruits</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>
	('000 metric tons)			
Grapes	160	408	510	675
Mangoes	250	400	1000	2200
Papaya	50	700	800	900
Pomegranate	50	150	375	540
Oranges	200	630	1500	1800
Strawberries	5	35	45	65

There has been tremendous growth in production of greenhouse flowers, mainly roses. In 1993 there were only three modern floriculture units. Today the number of units with more than 2.5 hectares has increased to twenty three. There are also 52 small floriculture units producing chrysanthemum, with a total of more than 10,000 sq ft. Area cultivated has increased by 500% in the last five years.

## **EXPORTS**

Exports of fresh fruits and vegetables have more than doubled in the past five years. The average growth rate for vegetables in the previous several years is 20%. In case of vegetables, exports onion exports are 65% of the state's total exports by volume.

The quantity of grapes exported has increased by five times in the past seven years. The annual increase is 25 to 40%. Other fruits exported are strawberries, bananas, pomegranates, and mangoes.

The growth in flower exports, mostly roses, has also increased sharply. Export quantity has increased ten times in the past three years. The value of roses exported in 1994 was Rs. 59 million, in 1995 Rs. 180 million and in 1996 Rs. 400 million. Exports to Japan have increased dramatically. Currently, India is the #1 supplier of roses to Japan, having passed Holland in that slot.

## **MARKETING INFRASTRUCTURE**

There are approximately 55 field chilling centers and pack-houses, most owned by cooperatives and private companies. These are located in areas growing grapes - Pune, Nashik, Sangli, and Solapur. One unit has been set up for pre-cooling, storage, and packaging of oranges in Nagpur. These were provided to cooperatives through 14%, 7-year loans from NCD and grants equivalent to 25% of capital cost from NHB. Grants for field chilling equipment have been discontinued by NHB, but it continues to provide loans at 4% interest rate.

A network of public markets for wholesale produce regulated by the Agriculture Market Produce Committee exists in the state. The Maharashtra State Agriculture Marketing Board (MSAMB) monitors operations and assists APMCs in design and building market yards.

Approximately 52 cold storage facilities owned by government corporations and private firms are in Maharashtra. Out of these, nearly 90% are owned by private companies. Except for grapes and flowers, there is no cold chain used for fruits and vegetables. In the early seventies, cold storage was mainly used to store potato seeds and few frozen food products. Later, with the increase in production of ice cream and export of fruit, pre-cooling and cold stores have gained importance.

MSAMB is directly involved in construction of markets, while APMCs operate the markets. For produce exports four principal agencies are involved: the port or airport authority, customs, security and phytosanitary agencies. Coordination between security, phytosanitary and customs authorities, and port or airport authorities is weak. There is no coordinated plan between the MSAMB, port and airport authorities and other agencies involved in horticulture promotion.

Important marketing infrastructure bottlenecks include

- 1 For exports, timely clearance from security, customs and phytosanitary agencies is difficult. Breaks in cold chain at ports and airports are also a problem.
- 2 Octroi and police checks delay reefer trucks when they pass through the cities and towns enroute to mandis, ports and airports.
- 3 Limited capacity of X-ray facilities for screening produce at the airports which delays loading and degrades the quality of produce due to thermal shock.
- 4 Low standards of post harvest handling, grading and packing even with the existing infrastructure.
- 5 Larger mandis are congested and do not have adequate facilities for grading, packing and cold storage.

A key issue in Maharashtra is the operational efficiency of existing infrastructure. Private exporters, traders and transporters report that administration of taxes, customs, security and permits are key bottlenecks. Every time a truck stops, waits or opens its doors, it cuts gross profit margins, and produce quality degrades till it reaches the consumer and fetches second or third grade prices. As margins decline, the amount traders are willing to pay farmers also declines.

In addition, at the port and airport, when refrigerated cargoes have to wait for loading at ambient conditions, goods suffer serious heat damage. These export points have a major impact on the quality of produce exported from the country. If these facilities met benchmarks for cold cargo services, receivers would pay higher prices for Indian products and transport losses would be lower.

A second issue is availability of cold stores and cold transport. Although capacity is slowly increasing, there is good reason for the government to consider ways to stimulate new capacity through two mechanisms:

- incentives for private investment in cold storage and transportation equipment
- removal of operational inefficiencies in government services related to taxes, customs, and permits

A third issue is the performance of key wholesale markets. Prices paid to farmers depend partly on how well these markets operate. There is considerable room for improvement in the performance of key markets. A first step would be to identify performance benchmarks and determine whether major markets meet these benchmarks. In addition, it is important to carefully examine the capital development programs of these markets to ensure that they can maintain, expand and upgrade services as needed. Financial sustainability is a third key step.

### MAJOR OPPORTUNITIES

Major opportunities for agricultural marketing infrastructure development include:

- Stimulating private (and cooperative) investment in modern packhouses, cold stores and cold transport
- Making municipal markets more efficient and financially sustainable
- Ensuring that physical infrastructure for perishables at Maharashtra's major port and airports is available, and properly managed
- Removing operational and administrative barriers related to stops on the road, ports and mandis
- Strengthening railway perishables facilities
- Improving post harvest handling, packing and packaging standards at village and mandi level

It is important for the government to encourage competition in cold storage, packing and transport services. Examples from Maharashtra demonstrate that competition in cold storage, trading and transport services leads to lower prices for services and higher prices to farmers. One example comes from the Kalyani Agro Corporation's grape export operation. In approximately 1991, Kalyani Agro set up a pack house for grapes bound for Europe and the Middle East. Shortly after the Kalyani pack-house became operational, a large grape grower observed that

## MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE STATUS

Kalyani Agro was making money by preparing the product for a high income market. This private grower set up a pack house near the Kalyani Agro pack-house and the farmer started to pay higher prices to growers to get product. This increased income to farmers but cut Kalyani's margins.

A significant part of the horticulture marketing infrastructure is owned by the public sector. The government owns and operates cold storage, wholesale and municipal markets, ports and airport cargo facilities. These facilities play critical roles in the state's marketing system. If they do not work well, farmers lose income. It would be important to regularly review both the financial and operational performance of these key facilities.

The principal markets for Maharashtra's horticulture products are

### IN MAHARASHTRA

- Mumbai
- Nashik
- Nagpur
- Pune
- Aurangbad
- Kolhapur

### OUTSIDE THE STATE

- New Delhi
- Calcutta
- Bangalore
- Ahmedabad
- Vadodra
- Madras

## MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE STATUS

A matrix for produce, production location and destination is given below

Location	Mangoes	Grapes	Tomato	Pomegranate	Bananas	Orange Lime	Sapota
Pune		1 2 3 8	1,2,3,5,6	1 2 3 8			1 2 3 4
Nashik		1,2,3,5, 6 7,8		1,3,5 6	1 3		1 3
Ratnagin	1 2,3 4, 5,6 7						
Nagpur						1,2 3 4 5 6 7 8	
Kolhapur			1 2 4		2		
Jalgaon					1,2,3 4 5,6,8		
Sangli			1,2,4,8		1,2		
Solapur		1 2		1 2,3,4,5,6,8		1 2 3	

**Destination Key** 1 Mumbai, 2 Pune 3 New Delhi 4 Bangalore 5 Vadodra  
6 Ahmedabad 7 Madras 8 Abroad

For most products, Maharashtra's major markets receive shipments of produce and then either redistribute goods to nearby regions or sell to the local retailers. Highly perishable produce coming to the market centers rarely goes to long distance markets and is mostly consumed locally. Less perishable vegetables such as onions and potatoes are sent to distant markets.

### GOVERNMENT REGULATIONS FOR AGRICULTURAL MARKETING

The Maharashtra Agricultural Produce Marketing Regulation also plays a key role in the state's marketing system. It was introduced in 1963 to regulate agriculture produce marketing. The act assigns a monopoly on operation of public markets to the Market Board and associated marketing committees. The scope of act was extended through amendments in 1964, 1967, 1990 and 1992. Objectives include

- Create and regulate market yards
- Collect and disseminate market information
- Conduct research and training in marketing of agriculture produce

After introducing the Marketing Act the state government set up three types of market yards. Principal markets are located at the taluka level, sub-markets are located in villages, and temporary markets are held weekly in places that do not have sufficient volume for a daily market. There are 259 principal markets and over 600 sub-markets in the state.

Agricultural goods regulated by the act fall into four categories:

- 1 Cereals and Pulses
- 2 Fruits and Vegetables
- 3 Animals and Poultry
- 4 Oil seeds

The act allows establishment of Agricultural Produce Market Committees (APMCs) at village and taluka levels. APMCs are formed as cooperatives under the cooperative society act. According to the APMC Act, no other body can establish wholesale agricultural markets. All brokers and traders must obtain licenses from the APMC to operate in the markets.

In theory, the Maharashtra State Agriculture Marketing Board (MSAMB) plays a key role in the development of marketing infrastructure in the state. Under the act, the MSAMB regulates and supervises all market yards. Using funds from the market cess, the board has a mandate to build markets, carry out state market planning, and establish and manage a fund to promote agriculture produce, conducting training, seminars and exhibitions.

The MSAMB's authority does not extend to perishables cargo facilities at ports or airports. Lack of responsibility for development of perishable cargo facilities at ports and airports is a serious constraint to the long-term growth of high value horticulture.

The Director of Agriculture Marketing is an ex-officio managing director of the MSAMB. The board prepares project reports for market infrastructure and obtains loans and grants from funding agencies such as the National Bank for Agriculture and Rural Development (NABARD), World Bank (through the Central Government) and the National Cooperative Development Corporation (NCDC). The MSAMB can also borrow money on the open market by issuing bonds.

### **Procedures for Establishing Markets**

Locations of market yards are identified by the Deputy Registrar at the District level. Identification is based on volumes of produce available in the region. After analysis of local production and trade, the Deputy Registrar sends a proposal to establish a market to the Director of Marketing. The Director discusses the proposal with the MSAMB, decides to build and arranges funds to set up the market. Markets are managed by a local market committee.

The APMC builds the market infrastructure and then auctions ownership of stalls to traders, commission agents, warehousing companies, weigh-bridge operator, and processors. Ownership is permanent and can be transferred through open market transactions. In addition, the local market committee receives a monthly maintenance fee from the shop owners. No firm or individual is allowed to operate unless he holds a valid license from the Marketing Committee. To maintain the facilities the Market Committee charges a percentage of turn over. This rate is fixed for a year and can be amended based on the budget requirements and discussion with the market committee.

The management structure of the APMC is as follows

<b><u>Members of APMC</u></b>	<b><u>Nos</u></b>
1 Agriculturists	10
2 Traders	2
3 Loaders/Weigh-men	1
3 Officers of Co-ops Department	2
4 Chairman of Panchayat Samite	1
5 Mayor of the Municipal Corporation	1
6 Chairman of Cooperative Processing Unit	1
Total	18

The board includes the chairman and vice chairman elected from agriculturists. The board appoints a secretary as the committee CEO for a period of three years. He or she is responsible for market management and is supported by administrative staff employed by the committee. Staff appointed by committee collect fees from traders, commission agents, weigh-men, and loaders. The fees must be deposited daily. Officers are empowered to force collection if the licensee does not pay the in time. The officers can dispose of assets if fees are not paid and can inspect daily receipt registers of traders and commission agents. It is widely suggested that only

part of the required fees are actually collected by the committee. Other parts of the fees are reportedly paid informally to various market participants. The financial management of major market committees would be a good subject for analysis.

### **APMC Income**

APMC derives its income from three sources. These are

- Market fee based on annual turn over
- License Fees
- Other income

The market fee produces 80% of total income. The market fee collected from all marketing activities by APMCs in 1993-94 was Rs 66.7 crs and in 1994-95 Rs 74.4 crs. The income from license fees was Rs 1 crs in 1993-94 and in 1994-95 was Rs 1.3 Crs, a rise of 33% over last year. The majority of APMC fees are collected for horticultural produce.

The total income of the APMCs in 1993-94 was Rs 84 Crs and in 1994-95 it rose to 90 crs, a rise of 7.8%.

The expenditure incurred by APMC consists of administration, board meetings and other expenditures mainly for development of market yards. Funds collected by market committees are allocated by the committee to purchase land for new market space, upgrading facilities, construction of buildings, training, payment of salaries. Administration expenses are 31% of total expenditure and was Rs 21.03 Crs (31%) in 1993-94 and Rs 23.99 Crs (18%) in 1994-95.

Other expenditure have substantially increased from Rs 44 Crs in 1993-94 to Rs 107 Crs in 1994-95. The total expenditure is more than fees and other expenses combined, equaling Rs 68 Crs in 1993-94 and increasing substantially in 1994-95 to Rs 132 Crs. The other expenditure category, where capital expenses are allocated, was 80.5% of the total expenses. During 1994-5, an exceptional expense was the construction of Vashi market near Mumbai, which was Rs 57.6 Crs. It seems that the expenditure made on market infrastructure development has been capitalized.

Excess funds required for development of market infrastructure are provided under a mixture of loans and grants by MSAMB, National Cooperative Development Corporation and National Horticulture Board.

Given the critical role of the APMCs and the MSAMB in development of infrastructure, we recommend that the panel conduct a more thorough analysis of the collection and use of market fees to determine if the optimal allocations are being made

### **Maharashtra State Agricultural Marketing Board (MSAMB)**

The major source of funds for MSAMB is a percentage of fees based on turn over from APMC markets, recovery of interest on loans, subsidies from National Horticulture Board and consultancy fees. The fee charged to APMC from a minimum of 1% over a turn over of Rs. 100,000 to 5% on a income of Rs 1 million

On the expenditure side MSAMB has loans to APMCs for development of markets, promotional expenses, manpower development and administrative expenses. MSAMB prepared a Master Plan to up-grade market infrastructure at principal and primary markets. The Master Plan was submitted to Government of India to obtain a soft term loan from the World Bank. The proposal was to set up an integrated market infrastructure facilities with auction platforms, cold storage, shopping complex, lodging, and computerization

MSAMB promotes export of agriculture produce especially fruits and flowers. This program began with promotion of grapes in Middle East and Europe. Promotional programs include

- Setting up cooperative fruit associations, including MahaGrapes, MahaMango
- Export of jasmine flowers to the Middle East
- Setting up of pre-cooling and cold storage facilities. Pre-cooling and cold storage facilities have been set up with imported equipment from California Humifresh of USA
- Computerization of auction prices in a commodity data base in Pune

The operational performance of public mandis is a critical issue in the agricultural marketing system. It is widely known that markets are generally congested and unsanitary. It would be valuable to conduct a "benchmarking" analysis of major markets in state to determine if the level of service provided is as needed.

**PRODUCE FLOW**

Nearly 90 to 95% of the produce reaches the consumers through commission agents and traders. However not all of this produce routes through the APMC markets set up for whole sale purpose. The balance of produce is sold directly by the farmers to the consumer through road side stalls and retail outlets owned by them or during weekly markets.

The major markets for marketing the fruits and vegetables are Mumbai, New Delhi, Calcutta, Bunker, Madras, Pune and Ahmedabad. The produce flow that occurs has been tabulated below.

<u>From</u>	<u>To</u>
Pune and Nashik	
Grapes	Mumbai, New Delhi, Calcutta, Ahmedabad, Madras
Tomatoes	Mumbai, New Delhi, Nagpur, Ahmedabad
Vegetables	Mumbai, Pune, Vadodra
Onions	North and East India, Mumbai, Gujarat, etc
Sangli	
Grapes	Mumbai, New Delhi, Calcutta, Ahmedabad, Madras
Pomegranate	Mumbai, New Delhi, Calcutta, Bangalore, Madras, Goa
Vegetables	Mumbai, Gujarat, Nashik, Pune
Jalgaon	
Banana	Mumbai, New Delhi, Calcutta, Madras, Ahmedabad, Bangalore, Complete North India
Nagpur	
Oranges	New Delhi, Bangalore, Gujarat, Calcutta, Indore, Bhopal, Madras, Hyderabad, Mumbai, Pune, Western Maharashtra
Ratnagiri	
Mangoes	North India, Mumbai, Pune, Bangalore, Madras, Calcutta, Nagpur, Ahmedabad, etc

The commodities mentioned earlier are the major fruits and vegetables which are marketed within and outside the state. The produce is purchased by local traders from the farmers in a secretive bidding and sold within or outside the state in APMC.

## MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE STATUS

markets As mentioned above some of the traders camp for months together near Pune and Nashik during grape season and in Nagpur during orange season The traders after packaging transport the commodity to required destination

Production centers for vegetables are usually located no more than three hundred kilometers from the target market, although there is a trend toward longer distances For example bananas are transported from Jalgaon over 800 Kms to New Delhi and 400 Kms to Mumbai The transportation mode adopted for produce from the villages varies widely The following is the usage pattern of transportation usage has been found

MODE	PERCENTAGE
1 Trucks	20
2 Tractors	19
3 Tempo-Trucks	22
4 Bullock Carts	35
5 Others	4

Produce going through the wholesale market varies from season to season, fruit to fruit, vegetable to vegetable, and location to location The percentage of produce which has been estimated that would go through different market yards in Maharashtra for each commodity is

Produce	Percentage				
	Pune	Ratnagiri	Mumbai	Nagpur	Nashik
1 Mangoes	5	5	20	---	5
2 Grapes	20	---	30	---	20
3 Onions	50	--	80	40	75
4 Vegetables	65	--	65	---	80
5 Oranges	70	--	90	30	70
6 Papaya	80	--	80	60	60
7 Custard Apple	60	--	80	75	50

The percentages of some of the commodities going through the market yard is low as traders by the produce as mangoes off the farm

## PACKAGING AND TRANSPORT

The usual means of packaging for fruits and vegetables in the state is gunny sacks, wooden boxes, cartons and baskets. It has also been observed that some of the produce is heaped in trucks, tempos or bullock carts. The commodities transported over short distance as papayas, oranges, mangoes are heaped and sent to the market or fruit processing plant. Bananas with stems are transported in open trucks by heaping with banana leaves in between. The height of such banana heaps in truck is generally 8 to 9 feet. Non reefer rail cars are used for transporting bananas from Jalgaon (Chalisgaon) to New Delhi. Such transportation takes anywhere between 7 to 10 days. Even though rail is the cheapest mode for transportation for the agriculture produce, priority has not been allotted. Potatoes and onions are transported in rail wagons from Uttar Pradesh to Mumbai and onions are transported from Nashik to markets in the north. Rail transportation has been not been used for most of other types of produce as it is not convenient and connected to produce areas.

In addition grapes, mangoes, papaya, pomegranate, strawberries, are increasingly packed in wooden crates and corrugated boxes and shipped by truck to distant markets.

The only exception is the strawberries which are shipped by air plane to long distances as it is perishable in nature. These are packed in and then in corrugated cartons boxes and sent to New Delhi, Calcutta and Chennai.

This is particularly true for mangoes and grapes. It is estimated that the mode of transport for transportation of produce over long distance may be the following:

Method of Transport	Percentage
Un-refrigerated mode* , Traditional Packing	83%
Un-refrigerated Trucks, Cartons or Boxes	10%
Refrigerated Trucks	4%
Freezer Trucks ( Frozen Products )	1%
Railway	2%
Air	Negligible

\* Mode Trucks, Tractors, tempo-trucks, bullock carts, etc

## **COLD STORAGE FACILITIES**

Nearly 80% of the cold storage facilities are owned by the private sector. However, one does not find that cold storage are owned at multi-locations thus a cold chain is not established in the state of Maharashtra.

The public sector companies who own the cold storage are two - MAFCO and HPMC. The cold chain is maintained by MAFCO but has been utilized to store their own products. The company stores frozen products as frozen peas, mango pulp, meat products.

## **Refrigerated Transport**

The reefer transportation has been in existence since two decades but has been now considered important with increase in export of fruits and floriculture produce. Initially, reefer transport system was used for transporting life-saving drugs, ice-cream, frozen food products, meat, etc. Presently, grapes and flowers are being transported from the production location to the exit point at the sea port or the air ports. The grapes are usually stuffed in reefer containers and sent directly to out-bound ships at the sea ports while the flower exporters own reefer trucks and send flowers to the air ports where these are re-loaded on to L D containers.

Even today, high value horticulture produce is not transported over long distance by reefer trucks.

## **Transport and Produce Flows**

Maharashtra produces tropical and sub-tropical fruits and vegetables. Major fruit crops are

- Grapes in western and northern regions
- Mangoes in coastal areas
- Oranges in eastern regions
- Banana in northern districts

## MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE STATUS

Fruits are exported throughout India and abroad. Growth of fruit and vegetable exports from Maharashtra is a major trend in the state. Crops and volumes are as follows:

DISTRICT	COMMODITIES			
	Mangoes	Grapes	Oranges	Banana
Pune		16850	126816	
Nashik	----	125455		
Solapur		13970		
Ratnagiri	138612	--	--	--
Nagpur			175504	
Wardha			70273	
Amravati			362540	
Sindhudurg				
Jalgaon				2047000
Prabhani				237000
Nanded				348480

The data indicate that growth of horticulture exports will average 7.5% over the next five years. In addition, Maharashtra's sales of produce to other regions of India is expected to grow at 6%. Growth of major metropolitan markets such as Mumbai is expected to be about 8%.

This growth will substantially raise demand for transport services in the state. This growth of infrastructure and services, in turn, will influence the rate of growth of produce trade. It is a classic "chicken and egg" situation, where the growth of marketing infrastructure will increase produce trade, and yet many entrepreneurs are waiting for the volume of produce traded to rise before investing in facilities.

## **PRODUCT MARKET SITUATION**

### **Bananas**

Bananas are generally harvested 75% ripe and sold in bunches. The bunches are transported in ordinary trucks or railway wagons. Sometimes banana leaves are stacked between layers of bananas as cushioning material.

Bananas generally travel between 200 and 1000 Kms from farm to final market. Major losses occur due to bruising and spoilage on the way to market. Bananas are transported in trucks and railway wagons without refrigeration to New Delhi and Calcutta markets. The bananas are generally transported in open trucks or closed wagons with stem attached and stacked to a height of 8 to 10 feet. The only packaging inserted in between is the leaves of banana. This causes blackening of the bananas at the bottom of hands. There have been instances of rotting of bananas arrival at New Delhi destination. The farmers claim that the freight fetched by transporting of bananas by railway is much more than the collective fare of passengers in a similar bogie. Even at times there is a shortage of rail wagons during the peak harvest period of bananas. Some times due to unavailability of wagons the banana had to remain stranded at the station for days thus resulting in a loss.

### **Mangoes**

It has been observed that nearly 25% of the mangoes remained on the tree due to non availability of market and labor. As mango is a perishable commodity most of the farmers sell the commodity at distress prices. It is only when the production is less the farmers get better prices.

Traders generally purchase the orchards just after flowering and then look after them till harvest. The traders pack the harvest, sort, grade and pack it in wooden boxes and send the produce to various location and markets out side the state.

Mangoes can be stored for a longer period in Controlled Atmosphere cool storage rooms. This would enable preserving the mangoes for 6 to 8 weeks and fetching better prices. The C A technology could also be adopted with refrigerated containers for exporting of mangoes by sea transport enabling transporting at a lower cost. Presently mangoes are shipped by air to countries in Europe.

Some officials of the state marketing board are aware about the controlled atmosphere technology and would be route to promote the new technique of storing mangoes

In order to export it would be also necessary to import hot water bath or steam sterilization method. This treatment would enable exporting mangoes to countries as Japan and USA. Necessary infrastructure need to be set up for prolonging shelf life of mangoes and transporting to long distances

### **Grapes**

The state is the largest producer of grapes in India. The present production of grapes has reached 450,000 Mts and nearly 60 to 70 % of grapes are marketed outside the state. The farmers, entrepreneurs and traders from the state export grapes to European, Middle-East and Far - Near East countries. Some of the exporters have also exported grapes to Russia and Bulgaria

The major exporters can be categorized in to two - one the private sector ( traders or farmers ) and secondly co-operative sector. The co-operative sector has set-up nearly 35 pre-cooling and cold storage units. The grapes are brought by individual farmers, who are members of the co-operative, to the pre cooling and cold storage unit for sorting, packaging and exporting. Each co-operative society has 15 to 20 farmers as members who act as feeder units to the main unit where the grapes are cooled, sorted and packed for exports. The grapes of the co-operative sector are exported under the " MAHAGRAPE " brand name. The grapes from interior parts of Sangli, Nashik and Pune travel to the port by reefer containers. These containers are loaded on to the ship to the destined country. Few of the farmers and traders have set up pre-cooling and cold storage facilities on their own. Grapes are pre-cooled and stored only if it is to be exported,

The major constraints faced by the grape exporters are

- 1 Acquiring reefer containers and getting of plug in facilities at the port during the export season is difficult
- 2 The truck drivers stop the reefer van engine to save diesel due to which there is a loss in grape quality, The truck drivers also need to be educated about the problems caused due to such action
- 3 Bad road condition delays in trucking the reefer van to the destination

- 4 The truck has to stop every octroi check post which increases the period of travel

Grapes are marketed with in or outside the state are not pre-cooled The grapes are generally stuffed in bamboo baskets or carton boxes The baskets are stuffed with 12 - 15 Kgs while the carton boxes are filled with 4 Kgs The grapes are sent by ordinary open truck to the northern, eastern and southern states through out the country Transporting of grapes by ordinary trucks has caused heavy losses to the traders or farmers

Some of the farmers directly market the grapes while others sell the farms of grapes directly to the traders even before the fruiting stage Less than 60% of grapes come to market yards of APMC and are directly marketed by traders in other states Most of the traders purchasing farms are from Northern India

The present problems faced by the grape exporters are

Long waiting period at the sea ports

- 1 Inadequate information of national and international markets
- 2 Lack of quality control mechanism leading to loss of opportune selling price in international market
- 3 Due to inadequate cold storage facilities the farmer has to sell the produce at disaster price during peak availability
- 4 No promotion and incentives to increase the grape production and exports
- 5 Inadequate supply of reefer containers during the peak season

## **Flowers**

Maharashtra is one of the largest producer of exportable roses The major number of floriculture units with large hecterage are located around Pune The major reasons for locating the units near Pune is due to several reasons, but the main being conducive climate and nearness to the international airport located at Mumbai Most of the floriculture units have exported the produce even after the constraints faced by them The floriculture units have the necessary infrastructure facilities as holding rooms, cool rooms for sorting, grading and packaging and lastly reefer vans for transporting of flowers to the air port

The flowers are exported to countries in Europe through Netherlands or directly to traders in Germany and England Flowers are exported to Russia and near by

countries. The flowers are presently exported to Japan and Near East countries as Singapore and Hong Kong where good market exists. India has now overtaken the Netherlands in rose export to Japan. The quality of flower exports are important in these countries and hence every possible link in the cold chain needs to be strengthened to maintain the quality till it reaches the importer.

The major constraint for export of flowers is at the air port. Here is where the major deterioration of flowers start due to

- 1 Non-availability of cool storage at the air port premises or with cargo handlers
- 2 Long waiting time due to inadequate X-ray facilities
- 3 Attitude of the people who handle the flowers
- 4 Security personnel who do not understand the importance of the perishable nature of the produce
- 5 Container stuffing of flowers is not being allowed. This would cut the waiting time at the air port. Contradictory to this, stuffing of grapes is allowed at the factory premises under the supervision of Excise Inspector

### ***Domestic Market for Flowers***

There exists no infrastructure worth mentioning for marketing good quality cut flowers. Presently the flowers which are marketed have different purpose and cannot be compared with the flowers being produced under green house conditions. Thus the whole sale markets that have been designed are not geared to sell cut flowers and the traders that market the flowers do not understand how to handle and maintain the quality of the flower. It has also been observed that the cut flowers in the whole sale market are not kept in water bucket but laid horizontally in steel racks thus affecting the quality in the first instance.

In most of the whole sale markets located in APMC yards a very small place has been set aside for selling of all types of flowers. Probably because cut flowers were not in being sold during that period and due to the type of flowers and purpose for which it was being sold.

Most of the cut flowers used for vase purpose as gladioli, roses, tube rose, carnations, etc., are marketed directly by retailers. These flowers though kept in a bucket of water are kept at ambient temperature due to which the quality is affected.

Even the public in general are still not aware that good quality of flowers with same color and shape are being produced in India. Hence there needs to create an awareness in the domestic market about good quality of flowers. There has been an increasing demand for quality flowers but such occasions are few like the Valentines day or birthdays. Such occasions would definitely assist in increase in marketing of the flowers and the producers need to take up aggressive marketing during that period. This could be done through association established by cut flower growers and with government support.

Infrastructure needs to be created to maintain the quality of flowers. This calls for setting up cool storage cubicles, Refrigerated cubicles or walk in rooms. This would assist in providing the consumer good quality of flowers for different occasions.

### **Other Fruits and Vegetables**

We estimate that 80 to 85 % of vegetables produced in Maharashtra is consumed within the state and is sold within the producing region. The only exception being tomatoes and onion which is sold to locations as New Delhi. Fruits as mangoes, pomegranate, papaya, sapota, custard apple, grapes, etc. travel long distances. It can be estimated that 50 to 60 % of these fruits are consumed within the state and mostly go to metro cities. Most of the fruits and vegetable start their journey in the afternoon or evening and reach the market destination early in the morning. Production areas for Mumbai and Pune are 100 to 350 Kms away. Most of the produce reaching the destination in ordinary trucks is degraded or incurs high losses due to internal and external heat and physical damage. The margins for the farmers tend to be low as the degraded produce is sold at low price.

## **EXPORT TRANSIT POINT INFRASTRUCTURE**

### **Infrastructure at Airports**

Air cargo infrastructure has been undergoing major change due to the repeal of the Air Cargo Act of 1953. Due to this act, air cargo capacity could not expand until the 1990s. The recent liberalization of air cargo regulations has dramatically increased cargo volumes.

There are still practically no perishables cargo facilities at major airports in the state, and existing ambient temperature cargo centers do not handle perishables properly. A common complaint among exporters, freight forwarders and airlines

## MAHARASHTRA AGRICULTURAL MARKETING INFRASTRUCTURE STATUS

handling perishables from Mumbai is that cargoes are handled at ambient temperatures after considerable delays, and then are loaded warm into the cargo holds of outbound jets. The result is that product temperature and transit times through Mumbai airport are far below industry requirements.

Total air cargo in Maharashtra was in 1993-94 and 1994-95. The share of exports of air cargo to the total export has also increased from 19% in 1993-94 to 31% in 1994-95. The annual growth rate for the cargo facilities has been 10% to 12% over the last two decades.

However, the growth has been not uniform over the last two decades as evident below.

Year	Domestic (000 metric tons)	International
1975-76	30	73
1980-81	66	112
1985-86	113	225
1990-91	108	280
1994-95	212	437

Cargo from the four major airports - Mumbai, Delhi, Madras and Calcutta - is nearly 78% of India's cargo traffic. The top ten airports account for 95% of cargo handled. This uneven distribution changes as more international airports are developed. Data from the Airport Authority of India shows that international cargo is 70% of the total cargo.

Cargo space at the transit area for perishable cargo at Mumbai Airport is 7,000 sq ft. The cargo area is not air conditioned and trucks have to dock at the docking bay which is open to external atmosphere. There is no refrigerated cargo storage space at Mumbai Airport except a walk-in cold facility which can store only one metric ton of material or 240 cubic feet. Even this facility is rarely used because storage capacity is inadequate.

During peak season from December to March, cargo handlers find it difficult to handle packed produce in the space allocated for the fresh produce. In addition, the perishables cargo facility is not properly designed to handle different products. Interviews with cargo service firms reveal that there is a shortage of weigh scales.

perishable cargo movement is slowly and there is no refrigeration either in the cargo area or on the apron

Delays and inadequate refrigeration are serious problems at the airport. Flower exporters find it difficult to move product through the airport as flowers are exposed to sudden change in temperature and humid conditions during the loading. As the airport does not have plug-in facilities, reefer vans wait outside and keep engines running. There have been instances when the produce waits on the tarmac in ambient conditions if there is delay in loading.

For the past three years, APEDA has been trying to set up a cold cargo center at Mumbai Sahar Airport. A similar suggestion was made for Pune Airport. The Mumbai Airport center has been designed by California Humifresh under a contract from APEDA. APEDA has received a grant from the National Horticulture Board to construct the facility and turn it over to IAAI for operation. Proposals were made to either construct the facility on a BOT basis, or for APEDA to construct the facility using NHB money and then let operations of the facility to a private firm on a concession basis. These private participation options are strongly favored by private companies involved in perishables exports. However, the IAAI has not been enthusiastic about turning management over to a private firm.

### **Infrastructure at Sea Ports**

Maharashtra has two major sea ports. The main port of Mumbai is located at the southern tip of Mumbai and is difficult to access due to inadequate road infrastructure. It is well known for delays of perishable cargoes.

The second port is located outside Mumbai near New Mumbai. The port is managed by Jawaharlal Nehru Port Trust, a Government of India undertaking under the Ministry of Surface Transport. Since its commissioning in 1989, containerized non-reefer and reefer traffic at the port has increased from a meager 33,880 TEUs to 423,148 TEUs in 1996-97. JNPT has a quay length of 680 meters which can accommodate 3 container class III vessels and 3 two berth container. JNPT has adequate facilities for cold cargoes as described below.

#### **1 Container Freight Station (CFS)**

Container freight stations are owned both in public and private sectors. The Central Warehousing Corporation has a container yard on 21 open hectares and covered

storage of 3 hectares CONWARE under Punjab Warehousing Corporation has a container storage facility on 11 hectares of land Private warehouses have been set up by MAERSK An additional facility is being set up by Gateway Distripark Maresk has been allotted 6 hectares of land and gateway 10 hectares

## **2 Container Handling Facilities**

The port is well equipped with container facilities The port has quay cranes rubber tired and rail mounted gantry cranes for handling containers Presently the port has twelve RTGC/RMGC and four quay cranes The port trust plans to increase the number of cranes by six by 2000 AD

### **Port Privatization**

The port trust is privatizing several port terminals JNPT has signed an agreement with P&O Australia, Consortium Perkapalan Bherad ( Malaysia) and DBC Port Managment Pvt Ltd India The consortium will build, operate and transfer a 6000 meters quay with a two container berth at a cost of Rs 7 billion

### **Refrigerated Container Storage**

Presently there are no cold storage facilities at the container buffer station in any of the CFS Refrigerated containers are generally factory stuffed and are allowed directly onto port loading areas

Custom authorities stuff, check and seal containers in the factory premises and do not require shipping bills during entry to the port The JNPT has 244 plug in points for the refrigerated containers These plug points were adequate earlier but with the increase in trade, facilities need to be added JNPT is planning to increase plug ins to 500 JNPT is also considering proposals from a private firm to set up plug-in facilities The operators would own generating sets for plug-in of reefer containers JNPT authorities are considering a rebate of Rs 1200 per megawatt for the power

### **Other Facilities**

The port has computerized customs processing with an electronic data information system This is required under GATT

## **PUBLIC SECTOR INITIATIVES FOR PRIVATE SECTOR DEVELOPMENT**

Industrial Incentives APEDA provides the following subsidies for horticulture industry projects

- Grants for conducting market surveys (50% of survey to maximum of Rs 2 lakhs) and product promotion (40% or maximum of Rs lakh \*\*\*
- Grants of 60% (up to Rs 1 lakh) of development cost for packing materials
- A packaging subsidy of 30% of the cost of packaging materials is provided, with a ceiling of Rs 1 lakh
- A subsidy of 50% with a ceiling of Rs 5 lakhs to establish quality control programs Air freight subsidy for export to Europe is Rs 10 per kg and SE Asia is Rs 6
- Post harvest handling facilities receive a subsidy of 50% of capital cost up to a maximum of Rs 5 lakh
- NHB provides loans at 4% interest equivalent to 25% of project cost to a ceiling of Rs 10 million for setting up post harvest handling facilities, cold packhouses or food processing units up to Rs 1 crore
- The state government offers subsidies for setting up industrial units in backward areas This includes waiver of sales taxes, octroi refund

MSWC The Maharashtra State Warehousing Corporation (MSWC) has been in a process to set up cold chain facilities with private participation The corporation, with technical assistance from ACE, trying to select partners and a site for setting up cold storage facilities MSWC has selected sites at various locations, including near New Mumbai, Satara, Nagpur, Nanded and Jalgaon The New Mumbai site has been finalized and a business plan is being prepared

APEDA is attempting to set up a perishable cargo complex at Mumbai Sahar Airport The facility will be owned and operated by the Airport Authority of India Despite receiving support for private participation from the Chairman of APEDA, the GOI Ministry of Industries and Ministry of Commerce, it appears that the private participation option is not acceptable to IAAI This issue is obviously one worth consideration by the Experts Panel

APMC Earlier the APMC - Pune along with MSAMB started a chartered Russian plane which could lift 6 Mts of produce This flight was planned to take produce from Pune to the Middle East and return without cargo The tariff for transport of the cargo was subsidized Even with the subsidy the project had to be shut down as it

was not financially viable. The project may be revived following a fresh tender to set up cold storage facility at the airport.

Recently the APMC and MSAMB has issued a tender for construction of a cold storage facility at Pune Airport. ACE suggested to several agencies that a BOT or management concession could be considered. This idea was rejected because Pune Airport is a military facility and does not allow private cargo operations within the airport perimeter.

**MSAMB AND APMC** The MSAMB is considering setting up cold storage facilities near Pune airport. MSAMB has been allotted land across the road from the airport for this project. A tender was recently issued by the APMC and MSAMB to construct the facility.

Maharashtra Agro-Industries Development Corporation Ltd. is primarily a fertilizer and pesticide manufacturing company. It also works with the Maharashtra Agriculture Farmers Cooperative which manufactures frozen peas, mango pulp, other processed food products and pork meat. MAFCO has set up cold storage facilities for their captive use. MAFCO occasionally rents its storage facilities to individuals and traders. However, the facilities are 20 years old and the sanitary conditions and operations are not adequate. A tour of the facility at Pune indicated that the corporation is trying to upgrade the facilities.

A proposal to set up a modern airport and auction center in line with the Dutch model, including storage and processing facilities, was proposed by MSAMB. Permission was not granted by the Defense Ministry because the airport is within 15 Kms. About 1500 acres of land was acquired by MSAMB.

The state government set up a Federation of the Agriculture Produce Marketing Committees to coordinate activities of APMCs in Maharashtra and to use the land that was acquired for auction center and airport. It would build pack houses with grading, packaging and cold storage facilities for horticulture produce. These facilities would be used for high value products and exports. This would relieve the pressure on the current wholesale market at Gultekedi.

The Secretary of the APMC Apex Federation, Mr. Boob, revealed that to set up this modern market complex, private investment and technical assistance are needed. It is possible for the ACE Project to provide technical assistance for setting up the infrastructure facility.

Pune Airport currently has no perishable cargo facilities. A properly run facility would benefit horticulture exporters, particularly the twenty flower producing companies that operate in the Pune area. Presently APMC is considering setting up a cold storage facility near the airport and a tender has been issued.

Several other recent infrastructure developments have the potential to affect produce trade dramatically in the next decade. These include:

- Completion of the Konkan Railway
- A possible BOT development of the Karwar Port in Karnataka
- Concessions awards for development of berths in Jawaharlal Nehru Port and container freight station at New Mumbai
- Discussion of a possible perishable cargo center to be established at Mumbai Sahar Airport on BOT basis is in progress

These are obvious areas for further analysis and possible coordinated action by state authorities. Development of appropriate perishables facilities at these ports, railways and airports would require relatively high level action by state agencies. It may be possible to use incentives and subsidies to induce private firms to provide state of the art facilities.

### **PRIVATE SECTOR INITIATIVES**

The cold storage facilities set up in the private sector are individual companies and usually do not have cold storage facilities at different locations. The individual cold storage units do not coordinate with the cold storage facilities at various locations. The facilities at each storage are varied in the services they provide. One unit may have facilities only to store frozen foods while other may have facilities to store at + 0 to 15 degree centigrade. Only few cold storages contacted had both frozen and cool facilities.

Snowman Ltd, Bangalore, in collaboration with Mitsubishi of Japan is setting up a cold chain in India. The company is constructing a cold storage facility near Pune which would be mainly used for storage of ice cream and seafood.

According to an act passed by the state government, it is not possible for a private institution to set wholesale markets. To attract private investment to wholesale markets, it may be necessary to amend the act.