



MARKETING AND PRODUCTION ECONOMICS



Marketing of litchi in India is largely dependent on the quantum of the produce available for sale within the state, outside the state within the Country and outside the Country. The quality of the produce as per the cultivar codex, infrastructure support for transport and market information system *vis-à-vis* the government polices play a vital role in marketing of highly perishable litchi fruits.

The pre harvest contract system is the most prevailed and acceptable method of litchi marketing as most of the growers prefer it due to obvious reasons however, some of them undertake self-marketing. Growers, who do not intend to market their litchi harvest, give litchi orchards to Pre- Harvest Contractors (PHC) during the month of January. PHC sells the orchard to the wholesale or commission agent, who undertakes the harvesting, packing and transportation of the produce to the market. Self-marketing in the distant domestic market is considered to be more profitable with higher net gain but it involves high marketing risk. Absence of price information and poor leadership are the constraints in self-marketing of litchi fruits. Short span of fruits availability in a particular orchard, high marketing expenditure, long distance to main market centres, remote production areas, absence of market regulation and exploitative marketing practices by market intermediaries are some of the important factors impeding self-marketing. The major marketing difficulty with litchi involves preserving its attractive red colour.

Prevailing Channel of Litchi Trade

Litchi is a highly perishable commodity which needs assured market within a very short period. To ensure quick disposal of fruits with less risk, various trade methods are prevailing:

- (a) **Preharvest sale of orchard:** Presently, the litchi growers in most of the cases sell their standing crop to pre-harvest contactors for one or more years. The price is negotiated and settled a lump-sum basis between growers and contactors and payment term is also finalized there in. The contactors have fair idea about the yield of orchard, quality of fruits

and offer the price accordingly. The price is generally negotiated on per tree basis which vary according to age of tree, maintenance, etc. On an average, a plant between 10-30 years of age with approximately 100 kg/tree yield potential can be sold out in Rs. 800-1000 for one year. This process take place after fruit set and the contractor maintains the plant only up to fruit harvest which is done by them. Some of the orchard owner also sell out the orchard for 4-5 years on lump-sum basis which is not at all considered good because the maintenance of orchard is solely remains in the hand of the contractors who often become reluctant and only confined to fruit harvest. Such contractors work for short term profit motive and do not care much for up keep of orchards.

- b. **Sale of fruit to commission agents:** Some growers who have little time, expertise and risk bearing capacity waits till the proper fruit growth and colour turning stage and keeps contact with commission agents and whole sale buyers whoever they can settle the deal. The mature crop is sold on negotiation basis based on the existing crop and market price. The produce is harvested by the buyer and disposed off as per his will and wish. In this case the payment terms are also settled between buyer and orchardist which generally remains 50% advance and rest after sale of produce.
- c. **Sale of fruits to Processing Industry:** Some orchardists and processing industry owner who have pre discussions also settler the deal on case to case basis number of such cases are although very few, but it also offers better price to orchardists with more confidence in this case the all categories of produce are sold at reasonably good price.

Commodity Movement from Production Area to Market

Most of the contactors market the litchi fruits as per their convenience. Some work as commission agents of wholesale merchants, operating from metro-cities, whereas some are financed by merchants and works on their behalf. Few pre harvest contactors also supply the produce to local processing units and export houses (although their number is very-very few). The following schematic diagram, Fig. 20.1 explains the channel of litchi marketing form Muzaffarpur.

The potential of litchi in India is unexploited so far. High price disparities exist between the returns that the producers get and the consumers pay. The Pre-Harvest Contractor or the commission agent makes the maximum margin in litchi marketing, as they only perform a transfer function without involving any other cost. The stockist in litchi sale adopts the undercover system and realizes higher margins.

Many litchi growers sell the standing crop to pre-harvest contractors at flowering stage for a year or more. In certain cases, the crop is leased out to pre harvest contractors for 2-3 years. The crop contractors negotiate and settle the price to be paid and the terms and conditions of payment directly with the growers. Most of the produce is sold through this mode. The pre-harvest contractors have a clear picture of the yield potential of the orchard as a whole and performance level of individual trees in the orchard. The price offered on a

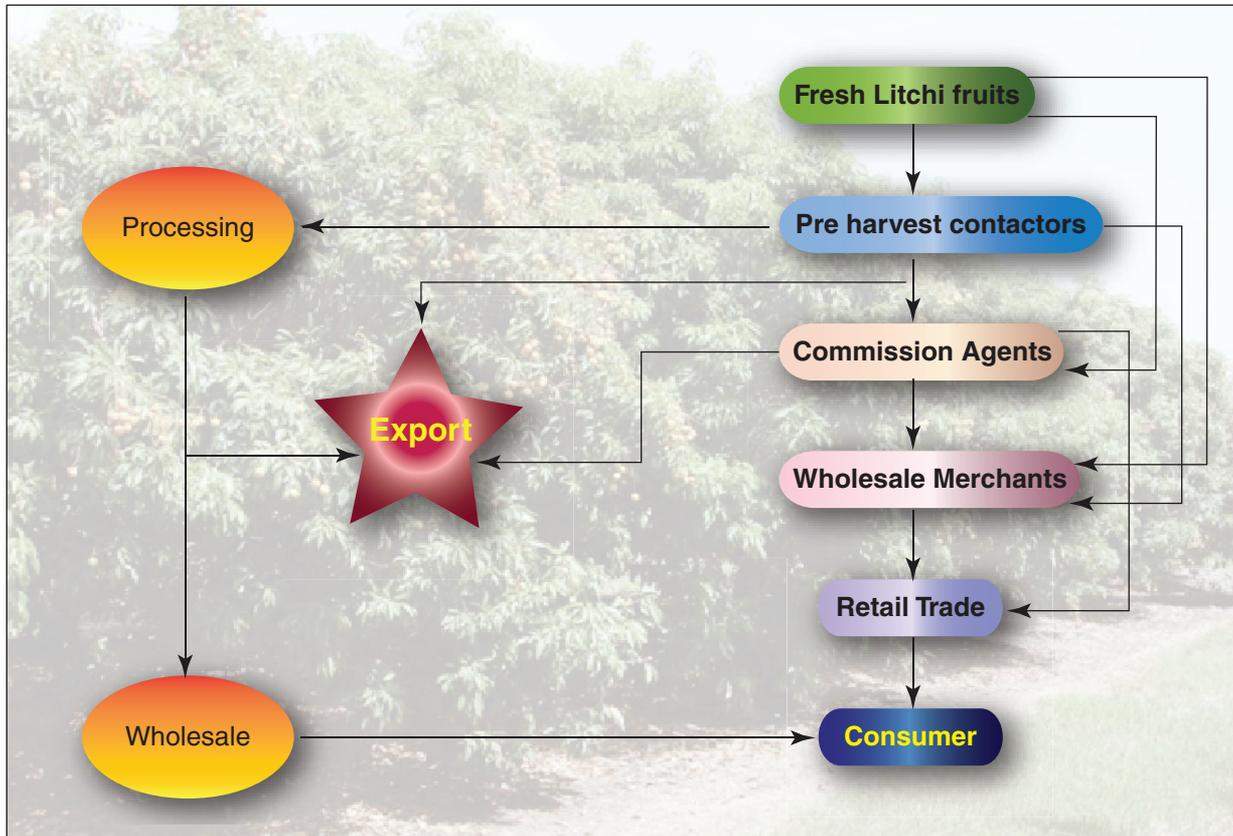


Fig. 20.1: Existing channels of Litchi Marketing

per tree basis varies according to the age category. The farmers receive 50 per cent of the settled price in advance (at the point of firming up deal) and the rest at the time of harvest. Harvesting, sorting, packaging are done in the farm itself by the contractor. Loading the truck for transport to distant cities is done at the farm gate itself.

The pre-harvest contract system prevailing in the country has an impact on the health and life of the litchi orchards. In cases where the contract is for 2 to 3 years, he works with a profit motive in mind and does not care much for the upkeep of the orchard. Contractors are not keen on investing in the orchard as they are not sure of continuing the contract during the next term. Most of such orchards belong to absentee landlords and suffer in the long run. Further, if the orchard owner is not present, harvesters may damage the twigs and branches while harvesting causing harm to the trees in the long run.

Pre-harvest contractors are the major players in the marketing of litchi. Most of the pre-harvest contractors are commission agents of wholesale merchants in cities like Mumbai, Delhi, etc. Some of them are financed by wholesale fruit merchants and are obliged to sell the fruits to their financiers. The pre-harvest contractors directly supply the commodity to the local processing units and export houses located in the region. Some of the established processing units and export houses in the region directly purchase the orchards from growers by making

advance payments. The commission agents and wholesale merchants play a greater role in the distribution of the produce after purchasing it from the pre-harvest contractors. They forward the produce to important cities in the country. At the terminal market, agents who operate on commission basis arrange to sell the produce. The daily arrivals at terminal markets are sold either by auction or through negotiations.

Only the best quality fruits are selected, packed and forwarded for marketing from the interstate trade while the slightly inferior quality produce is sold in markets within the state. The fruits are transported and handled throughout the marketing chain at normal temperature conditions i.e. without pre cooling. The market reach is limited to places/ cities which could be covered within 36 hours of harvest since the fruits lose their attractive red colour after 48 hours, rendering the fruits unmarketable. Fruits are graded and packed in the farm itself. Two types of packs are used. Traditionally 16 to 18 kg wooden boxes were used. However, drying up of sisam, the raw material for wooden boxes and the prohibition on cutting trees under forest law has forced the traders to go for 15 kg cardboard cartons. The major chunk of the produce is transported through trucks. The standard practice is to load 500 boxes per truck irrespective of the weight of individual boxes. Thus the weight of the fruits transported per truck varies from 7.5 T (cardboard carton) and 8 to 9 T (wooden box). The fruits are loaded to trucks at the farm gate or at points near to the farms. Delhi, Mumbai, cities of Punjab, Mumbai and UP cities like Kanpur and Lucknow, Kharagpur are the major destinations for litchi. 80% of the litchi marketed and sold through interstate trade.

Presently, pre cooling and cool chain transportation are not adopted for want of cool chain at the terminal markets. Though efforts have been made for cool chain linked interstate trade of litchi, the volume has remained very small.

Price Structure

Like many other fruit crops, minimum support price for litchi is not fixed therefore; there are no official records or publication showing the prices of litchi. Growers do not maintain any record of their produce and price and the same happens with the contractors. The commission agents and wholesale merchants do keep accounts of their business and their records provide some information regarding the quality and the variety procured and sold by them. Litchi prices vary a great deal from year to year, depending upon each year's total production and various other factors like demand, transport and marketing facilities. Daily arrivals have a direct impact on the prices. Thus, there is a seasonal and annual variation in prices. Ordinarily, the prices are high at the commencement of the season, declining gradually as the supplies increase. Later on, when the arrivals decrease, a high level price is again seen before the close of the season. There is no uniform pattern for price quotations. The unit of sale, both in wholesale and retail trade, varies from place to place. However, to get good price one should make good quality of litchi because quality is not a chance but it comes through year round efforts.

World Trade

South East Asian countries like China, Vietnam, Thailand, India, Bangladesh and Nepal produces about 95% of litchi of the world. Australia, South Africa and Madagascar are the major litchi produces in the Southern hemisphere. Countries with smaller production include the Philippines, Indonesia, Israel, USA, Brazil, Mexico, Canary Islands, Mauritius, Reunions, Zimbabwe and Mozambique. The litchi trade had increased steadily in all major markets in the past decades. In recent years, the demand of fresh as well as processed litchi has increased many folds in domestic as well as international markets particularly in Europe.

Most of the litchi fruit grown in South-East Asia and the Pacific is sold within the country or close to the areas in which it is produced (Table 20.1). The Middle East, which includes Bahrain, Kuwait, UAE, Oman, and Saudi Arabia is a major market for litchi. The major suppliers of litchi fruits are Madagascar, South Africa, Mauritius, Thailand, and Australia. Markets of Europe consist of Netherlands, UK, and Germany where they receives major share from South Africa, Madagascar, Thailand and Israel. Litchi has market for fresh fruits but canned, frozen and dried fruits are also exported to some extent.

Table 20.1: Major litchi-exporting countries

Exporting Countries	Export (%)	Importing Countries
China	2%	Hong Kong, Japan, Singapore, USA, Australia, Korea, Europe middle East, North America
Taiwan	5%	Philippines, Japan, Singapore, USA, Canada
Thailand	10%	Malaysia, Singapore, Hong Kong, Europe, Canada
Australia	33%	Hong Kong, Singapore, Europe, Arab States
South Africa	50%	Europe (France, Nether land, Germany, U.K.)
Israel	95%	Europe

In India, the marketing of litchi is unorganized leading to a meager export. Fig. 20.2) clearly depicts the export of the litchi fruits in last five years.

During 2005-06, there were no exports of litchi fruits to Gulf countries. Whereas during 2005-06 and 2006-07, there was no export of litchi fruits to European countries too. However, during 2003-04, 140 tons of litchi were exported to Belgium, 64 tons to UK and 34 tons to Netherlands.

This clearly shows that the exports of litchi to EU have declined inspite of the fact that the Indian litchi is available 2-3 weeks earlier than Thai litchi and 4-5 weeks earlier than Chinese litchi. The major reasons for this decline is the increasing domestic demand for this Juicy fruits and better price margin in local market.



Fig.20.2: Export of litchi in last five years

Export Potential of Indian Litchi

Even with low quantum and unstable trend of export of litchi fruits, it does have immense potential. The potential for export of litchi exists in various countries.

(i) To GCC Countries

Gulf countries imported litchi during 2006 up to 45,545 tons (Com trade database). As per this database India exported litchi to GCC countries to the tune of 16,410 tons, however, APEDA database depicts no export of litchi during 2005-06 and 2006-07 to Gulf countries. Nevertheless, there is excellent potential for export of litchi to GCC countries, as India produces finest litchis. Litchis in India are available from 15th April (Tripura) onwards up to third week of June (Gurdaspur, Punjab). India is also supplying litchis to GCC countries at competitive prices compared to Thailand. Appropriate infrastructure is also available for post-harvest handling in a couple of states. India is also nearer to Gulf countries compared to Thailand and China. There is no reason why India cannot export litchi to Gulf countries up to 4000 to 5000 tons in next 4-5 years.

(ii) To EU Countries

EU countries imported sizeable quantities of litchi during 2006. However, inspite of excellent potential for exports and even nearness of EU countries to India compared to Thailand and China, India has not been able to export any sizable amount of litchi to EU except during 2003-04 when some amount of litchi was exported. The potential needs to be exploited by

aggressive marketing and supplying better quality litchi having minimum pesticide residues etc.

Measures for Enhancing Competitiveness for Exports

- To enhance competitiveness of India in exporting litchi following measures can be suitably undertaken
- To exploit export of organic litchi in foreign markets, its cultivation in Tripura and Assam needs to be encouraged and to facilitate it, packhouses need to be established in a phased manner. Side by side markets for organic litchi need to be identified.
- Litchi producing areas in Gurdaspur and Hoshiarpur districts of Punjab are near to Amritsar international airport. Export of litchi from this area can be enhanced by setting up of packhouse in the area.
- Technology for CA and MA storage of litchi needs to be standardized perfected so that shelf life of litchi can be extended and then litchi to nearer areas like Gulf countries can be sent by reefer containers through MA cartons.
- Residue analysis laboratory need to be set up appropriately to minimize the risk of rejection of consignment to begin with.

Litchi Marketing

National and International marketing of litchi is expanding very fast. The Indian litchi has period advantage of fruit availability (May-July) when premium quality litchi is not available elsewhere except Thailand (May-June) and Israel (July) but quantum of produce available from these (Two) Countries is very less or negligible. Despite the period advantage, India has negligible share in the world litchi trade. This happens because of strong inter-state trade of litchi and more demand of produce at higher price in domestic market. Besides meeting domestic demands efforts are needed to promote export of litchi during main season. Before exporting litchi abroad, certain requirement of international marketing has to be fulfilled.

- (1) **The fruits should be of extra grade:** The extra grade fruits measuring 33 mm diameter and coinciding with nearly 95 % to the specified characters of variety with respect to fruit colour and shape. Nearly, 15-20 per cent fruits only have this character and those can be graded for export.
- (2) **The fruits should be properly packed and stored:** Sulphited litchi fruits are banned in International market. Therefore, to keep the fruits in proper condition on arrival at terminal market, Modified Atmospheric Packaging (MAP) along with Control Atmospheric Storage (CAS) condition is required.
- (3) **Possibilities from non-traditional area:** The other possibility of litchi export from India could be from nontraditional areas particularly the Southern India where the litchi matures by December. This period is advantageous for export to European Union where

there is high demand during Christmas period. During this period, the Indian litchi will face a tough competition from Madagascar and Mauritius litchi therefore high quality fruits have to be ensured.

- (4) An effective communication and networking between fruit growers and various stakeholders in the value chain is needed for organized export.
- (5) Most of the litchi produced in India particularly in Assam, Tripura, and Bihar are organic in nature and need to be exported as of organic litchi to foreign market. Even for normal produce “Brand promotion” is needed to catch the assured market.

Reasons for Declining Status of Litchi Export

The export share of litchi is declining due to following reasons.

- The domestic demand of the fruit is very high.
- Limited produce is available for export purpose and U.S. market allows produce free from oriental fruit fly.
- Lack of initiative for export facilities.
- Fresh fruits are highly perishable since Sulphitation process is prohibited in international market, the shelf life and appearance of fruit get reduced.
- Lack of initiative for export facilities.
- Due to high freight charges exporting litchi only through ship to nearer market may be profitable. In comparison to long distance export profit is better in domestic market.

Economics of Litchi Export: a Case Study

In an estimate, it has been found that a kilogram litchi of export quality (33mm diameter) can be shorted out from 4-5 kg good quality fruits total costing not less than Rs. 125-150 (for 5 kg fruits). This one kg extra grade fruit also have an over head expense of Rs. 80-100 to reach to New York/Washington market where it is sold in 5-6 USD (Rs. 270-280). So the net profit is Rs. 50-60 per kilogram of exported litchi along with Rs. 200 for rest of the produce totalling to Net profit of around Rs. 250-260. If the same 5 kg produce is sold in domestic market of Chennai/Mumbai it fetches a price of Rs. 600-700 and the net expense on produce is Rs. 250 (including the cost of produce and over head expenses). So the net profit would be around Rs. 350-400 for the same quality of litchi produce (Table 20.2). Presently less than 5 % of the world production enters into world trade on an annual basis which is expected to increase in the coming years.

Table 20.2: Comparative Cost:Benefit ratio of litchi fruit trade in domestic and international markets

1.	Out of 5 kg good quality fruit – 1 kg export quality fruit is obtained.	
2.	Purchase price of litchi is	Rs. 50/ kg.
3.	If Price of fresh litchi in US is 6 USD/kg	
4.	Price of fresh Litchi in Mumbai is	Rs. 130/ kg.
5.	Price of sorted litchi in Mumbai market is	Rs. 100/ kg.
(A) C:B in Domestic market:		
	The purchase price of 5 kg fruit:	5x50 = 250
	Over head expenses for sale of 5 kg fruit:	5x20=100
	Cost price of 5 kg fruit in domestic market:	350 (250+100)
	Sale price of 5 kg fruits in domestic market:	5x 130=650
	Next profit:	650-350= Rs. 300
(B) C:B in International market:		
	The purchase price of 5 kg fruits:	5x50 = 250 (i)
	Graded fruit for export:	1 kg
	Left out fruit for domestic:	4 kg.
	Over head charges for export of 1 kg fruit:	Rs. 100 (ii)
	Sale price of 1 kg fruit in US market (6 USD/kg):	Rs. 280 (iv)
	Over head charges for sale of 4 kg fruit in domestic market:	4x20= 80 (iii)
	Sale price of 4 kg fruits in domestic market:	4x100= 400 (v)
	Total Cost for 5 kg fruits in Export +domestic market:	430 (I+II+III)
	Sale price of 5 kg fruits in Exports +domestic market (iv+v)	Rs. 680.00
	Net profit (680-430)	Rs. 250.00

Therefore, the net profit in domestic market (Rs. 300/5 kg fruit) is higher than profit in exporting (Rs. 250/5 kg fruit) fresh litchi produce.

Thus, post harvest handling, marketing and trade of litchi is the most demanding sector of “Litchi Industry” in the country. The systematic focus particularly on infrastructure and cool chain management will ensure the high quality litchi to the consumers within country and abroad.

Production Economics of Litchi

While discussing the benefits and profits of litchi marketing and trade, it become absolutely essential to bring out the production cost of a litchi orchard over a period of time and its benefit; cost ratio. The major investment in litchi production is land, labour and capital for various inputs and operations. Out of which land can be considered as input available with the farming communities. The following Table 20.3 explains the per hectare cost of litchi orchard establishment at a normal spacing of 8x8 m. and Table 20.4 provides the detailed expenditure and income from one hectare litchi orchards.

Table 20.3: Cost of cultivation of one hectare litchi: Orchard

Sl. No.	Heads/ Particulars of cultivation	Cost (Rs.)
1.	Ploughing and leveling of lands	2800.00
2.	Layout and digging of pits (144 no.)	4200.00
3.	Cost of inputs (FYM, oilcakes, insecticides, etc) and mixing	6400.00
4.	Cost of pit filling and planting	2500.00
5.	Cost of planting material (10% extra)	5600.00
7.	Cost of irrigation and making of irrigation channel with manpower	13000.00
8.	Cost of pesticides and spraying (3 sprays)	1400.00
9	Cost of Intercultural operation (3-4 times)	4000.00
10.	Miscellaneous expenditure (pegs, bamboo for support, rope, etc.)	1600.00
11.	Protection from cold and hot wave	2500.00
Total		44000.00

Note: Rate of manpower was Rs. 150/-day for 8 hour work.

Table 20.4: Maintenance cost of litchi orchard (one hectare) in subsequent years after the establishment of orchards under normal condition

Years of orchards establishment	Cost incurred on different items (Rs.)	Av. Yield per plant Kg. (Kg)	Value realized (Rs.)	Profit (+/ -) (Rs.)	Progressive Cost (Rs.)
1 st year	44000.00	-	-	- 44000.00	- 44000.00
2 nd year	28816.00	-	-	- 28816.00	-72816.00
3 rd year	36740.00	-	-	- 36740.00	-109556.00
4 th year	37290.00	-	-	- 37290.00	- 146843.00
5 th	39710.00	2.5	10800.00	- 28910.00	- 175756.00
6 th	54450.00	3.0	12960.00	- 41490.00	- 217246.00
7 th	59180.00	10.0	43200.00	- 15980.00	- 233226.00
8 th	63910.00	16.0	69120.00	+ 5210.00	- 230716.00
9 th	71170.00	25.0	108000.00	+ 36830.00	-193886.00
10 th	79640.00	30.0	129600.00	+ 49960.00	- 43926.00
11 th 90970.00		35.0	151200.00	+ 60230.00	- 83696.00
12 th	96030.00	40.0	172800.00	+ 76770.00	- 6926.00
13 th	99440.00	45.0	194400.00	+ 94960.00	+ 88034.00
14 th	102960.00	50.0	216000.00	+ 113040.00	+ 201074.00
15 th	106480.00	55.0	237600.00	+131120.00	+ 332194.00
16 th	110220.00	60.0	259200.00	+148980.00	+ 481174.00
17 th	115390.00	65.0	280800.00	+165410.00	+ 646584.00
18 th	120230.00	70.0	302400.00	+182170.00	+ 828754.00
19 th	125400.00	75.0	324000.00	+198600.00	+ 1027354.00
20 th	130130.00	80.0	345600.00	+215470.00	+ 1242824.00

Note: The plants have to be maintained for at least 15 years to make them in full bearing

- * Cost incurred in watch and ward has not taken into consideration as one time fencing with barbed wire to be done around the orchards to prevent from the stray animal
- * Cost of labour/ manpower charged at the existing rate for agricultural labour (MWA)
- * Cost of farm machinery (tractor, irrigation pump with engine) and implements have been taken into consideration as one time investment farmer.
- * Cost of land not taken into consideration
- * 2nd year and onwards cost incurred on intercultural operation, manures and fertilizers, pesticides, irrigation, protection from cold wave, etc and manpower engaged in the operation have been taken into consideration
- * Average yield per plant under good management condition has been considered however actual marketable yield may be 10-15% less of total harvested yield.
- * Vagaries of adverse climatic conditions have not been considered.