

Original Research Article

Export Potential and Marketing of Litchi in Muzaffarpur District of Bihar

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ABSTRACT

The study was carried out to assess the current status of export and marketing of litchi and was based on the primary data collected from 120 randomly selected Litchi growers in Muzaffarpur district of Bihar. The feasibility of export of litchi from Muzaffarpur to European markets has taken a new dimension with the fast changing technology in the exporting of fruits since 1993. The study also intended to find out marketing system and marketing channels followed by growers in domestic and overseas as marketing, marketing costs, marketing margin incurred price spread and marketing efficiency resulted in domestic markets. Along with, trend in area, production, productivity and export. The producer's share in consumer rupee in channel Ist is highest since it is the shortest channel (83.64 percent) where as the producer's share in consumer rupee in channel I, channel II and Channel III are 72.72 percent 65.45 percent and 54.54 percent respectively. The price spread in channel I is the lowest because it is the shortest channel (Rs.900) where as the price spread in channel II, channel III and channel IV are Rs. 1500, 1900, and 2500 respectively. The marketing efficiency for channel I, II, III and IV were 5.11, 2.66, 1.89 and 1.09 respectively. It is observed from this efficiency index that channel first was the most efficient one.

Keywords

Export potential,
Marketing, Litchi

Introduction

Litchi (*Litchi chinensis* Sonn), an important sub-tropical evergreen fruit crop belonging to family Sapindaceae, is believed to have originated in China, where it has been grown in Southern Gang ngdong state for thousands of years. It is highly specific climatic requirements and probably due to this reason

its cultivation is restricted to few countries in the world. In India, litchi was introduced in the 18th century through Burma, and from there, it spread to any countries. India and China Litchi is a delicious fruit of excellent quality. The fruit has high sugar content which varies from 10 to 22 per cent due to cultivar and climatic conditions. Besides sugars, litchi contains 0.7 per cent protein,

0.3 per cent fat, 0.7 per cent minerals (particularly calcium and phosphorus) and vitamin C (64mg/100 g pulp), and Vitamin A, B1 and B2 are also present in considerable amount account for 91 percent of the world litchi production but it is marketed locally.

The 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 formation system as well as the government policies play a vital role in marketing of highly perishable litchi fruits. Marketing of litchi in Bihar involves the participation of a number of middlemen between the producer and ultimate consumers.

Consequently, the price paid by the latter gets reduced when it reaches the producer. There is a significant difference between price paid by the consumers and the price received by producers and substantial part of it is being appropriated by the intermediaries. PHC plays a crucial role in litchi market in Muzaffarpur.

The traders enter into contract with producers to buy litchi in the field itself at negotiated price before harvesting of litchi and sell them in urban markets through commission agent at the time of harvest.

If price is higher than the negotiated price, they do not share the higher returns with the producers and producer are paid only the contract price, while in the case of harvest price falling below the pre-harvest price the contractors deduct 10 per cent from the value of produce sold by them while paying to the producers.

Materials and Methods

Export analysis

The compound growth rates were estimated by fitting exponential foundation for the data. The equation fitted was of the following form

$$Y = ab^t$$

Where,

$$Y = \text{Area (000ha)} / \text{production (000MT)} / \text{productivity (MT/ha)} / \text{Export (Tonnes)/ Value (/kg)}$$

a = constant

b = Regression coefficient

t = time period in years.

Finally, the annual rate of compound growth in area, production and productivity and export of litchi were work out by using the formula

$$r = (\text{Antilog } b - 1) \times 100$$

The significance of the estimated compound growth rates was tested with the help of student's 't' test

A list of all the litchi growers in two blocks was prepared. The relevant information and wear collected from 40 litchi growers and 80 market intermediaries from all the blocks were randomly selected making the total sample of 120.

Four channels are identified based on the preliminary information;

Channel-I: Producer - Consumer

Channel-II: Producer - Retailer - Consumer

Channel-III: Producer - Wholesaler - Retailer - Consumer.

Channel-IV: Producer - Commission agent - Wholesaler - Consumer.

The data were collected by survey method from the sample farmers, Local traders, wholesaler, retailers and consumer by interviewing them with the help of specifically prepared and pre tested schedules for the purpose. The information was collected for the agricultural year 2017-18.

Each of the selected cultivators, local traders, wholesalers, retailers and consumers were contacted twice or three in order to fill in the schedules.

The marketing system, channel and efficiency of litchi Marketing, primary data from selected farmers of the villages were collected for the purpose.

The information was collected on system of marketing and item wise cost incurred in the marketing of litchi on selected farmers to examine the price spread and channels of litchi marketing in Muzaffarpur market.

Pre-Harvest Contractor, village traders, wholesaler's/commission agent, retails and consumer were contracted to obtain information's related to price received and paid per box of produce, as well as marketing cost incurred and margin taken at subsequent stages of its marketing.

Cost of marketing

The cost total cost incurred on marketing in cash or kind, by the producer-seller and by various intermediaries involved in the sale and purchase of the commodity till the commodity reaches the ultimate consumer was computed as follows.

$$C = C_f + C_{m1} + C_{m2} + C_{m3} + \dots + C_{mn}$$

Where,

C = Total cost of marketing of the commodity.

C_f = Cost paid by the producer from the time, the produce leaves the farm till sale.

C_{mn} = Cost incurred by the nth middlemen in the process of buying and selling the product.

B. Producer's share in consumer's rupees

It is the price received by the producer as a percentage in the consumer price.

$$P_s = (P_f/P_c) \times 100$$

If (P_c) is a consumer's price and (P_f) is the producer's price, then the producers share in consumer rupee (P_s) expressed as follows

Marketing Margin of Middleman

This is the different between the total payments (cost + purchase price and receipts (sale price)of the middleman (Ith agency)

Absolute Margin of the it middleman (A_{mi})

$$(A_{mi}) = P_{ri} - P_{pi} + C_{mi}$$

Percentage margin of the middleman (P_{mi})

$$(P_{mi}) = \frac{P_{ri} - P_{pi} + C_{mi}}{P_{ri}} \times 100$$

P_{ri}

Where,

P_{ri} = total value of receipts per unit table (sale price)

P_{pi} = Purchase value of goods per unit (Purchase price)

Cmi = Cost incurred on marketing per unit.

Analysis of price spread under channels

It is the difference between the price paid by the consumer and the price received by the producer. The price spread was worked by using following method.

Where,

Pp = Price paid by the consumer

Pf = Price received by the farmer

Analysis of marketing Efficiency under different channel

The marketing efficiency is a measure of market performance. The movement of goods from producers to the ultimate consumers at the lowest possible cost consistent with the provision of service desired by the consumers at lowest possible cost consistent with the provision of service desired by the consumers is termed as efficient marketing.

Shepherd's Formula

Shepherd (1965) suggested that the ratio of total value of goods marketed to the marketing cost could be used as a measure of marketing efficiency.

The higher this ratio, higher would be the efficiency and vice-versa. This can be expressed in the following form.

Where,

$$ME = [(V/I)]$$

ME = Index of marketing efficiency

V = Value of goods sold.

I = Total marketing cost.

Results and Discussion

The information about year wise quantity exported from Muzaffarpur and India and their value were presented in table 1.

Data presented in the table 1 revealed that there was increase in export from India both in quantity and value terms. The compound growth rate for quantity exported stood at 6.34 and for value 17.55 which are significant at 1 per cent and 5 per cent level of significance respectively.

Although Indian litchi has excellent quality and is praised all round the world and there is chance of harnessing the export competitiveness of litchi fruit in different world market which can be seen from increasing trend.

The export of litchi from Muzaffarpur has also marked increase during the same period of 2001 -2002 to 2015-2016. The calculated annual compound growth rate was -1.64 which is significant at 5 percent level of significance. The percentage change over the base year also increased by 20.75 percent but it is quite less when compared with the percentage change from the export country level which is as high as 70.88 percent in quantity term.

This comparison made as to conclude that although the export from Muzaffarpur also increased but its share in total countries litchi export is declining which had a compound growth rate negative at 7.52 which is significant.

Table 2 shows that, India mostly exports litchi to few neighboring countries like Bangladesh, Nepal, Arabian countries like UAE, Bahrain, Canada and European countries as Germany and United Kingdom. The table depicts that the triennium average of quantity exported to different countries

had shown increase from 170453 kg to 751133.54 kg before and after creation of Agri Export Zone respectively' The average per kg. Price also has increased from 46.85 to 136,81Rs.per kg after Agri Export Zone formation.

The per kg was highest to United Kingdom which was 255 and lowest in case of Nepal 25.51 per kg. The price realized in Bangladesh was 77;63 per kg while in Arab countries average price gained was in the range of 50.81 to 66.67. Thud export to UK was most profitable followed by Bangladesh and Arab countries. The price of litchi per kilogram has increased in all the countries

The change in price before and after formation of Agri export zone was highest (370.04 percent in UK followed by Canada 9262.53)

The least increase in price was observed in case of Nepal (1,28 percent) Earlier formation of Agri Export Zone export to Bangladesh has increased. India has stopped export of litchi to Oman which was regular importer of Indian litchi before creation of Agri Export Zone.

Marketing channel

The marketing channels state that how produce passes through different agencies from producers till it reaches to the final consumer. It is essential to point out different marketing channels existing in litchi marketing

*Price spread in channel I (Producer – Consumer)

*Price Spread in Channel II (Producer – Retailer – Consumer)

Price spread in channel III- (Producer – Wholesaler – Retailer- Consumer)

*Price spread in channel IV-(Producer-Commission agent-wholesale – Retailer-Consumer

Table 3 showed that the total marketing cost, total marketing margin, price spread and producer's share in consumer's rupee in the four different marketing channels. The total marketing cost was highest in channel IV (Rs. 2000.00 / quintal), followed by channel III (Rs.1700.00 / quintal), channel II (Rs. 1500.00 / quintal) and channel I (Rs. 900.00 / quintal) respectively.

Price spread of channel IV was highest (Rs. 2500.00/quintal followed by channel III (Rs. 1900.00 per quintal), channel II (Rs. 1500.00 per quintal and channel I (Rs.900.00 per quintal) respectively.

The marketing efficiency under different marketing channel was worked out by using Acharya's Method and revealed that channel I was found to be most efficient with marketing efficiency of 5.11 percent compared to 2.66 percent in channel II, 1.89 percent in channel III and 1.02 percent in channel IV.

The low marketing efficiency in channel IV was due to higher number of marketing intermediaries in this chain which raises the marketing cost and the margins in the channel and eventually brings down the producer's price.

Table.1 Trend of export of litchi from Muzaffarpur and India (2001-02 to 2015-16)

Quantity – tonnes, value - Rupee /kg

S. No.	Quantity exported			Value (kg)	Percent share in Export
	Year	Muzaffarpur	India		
1.	2001-02	53	300.00	12.00	17.67
2.	2002-03	42	347.00	20.46	12.10
3.	2003-04	46	962.00	13.93	4.78
4.	2004-05	25	544.00	13.03	4.59
5.	2005-06	22	718.00	13.04	3.06
6.	2006-07	30	1661.00	98.90	1.80
7.	2007-08	40	1615.00	39.28	24.76
8.	2008-09	50	1546.50	100.80	3.24
9.	2009-10	21	545.40	163.01	3.85
10.	2010-11	46	1186.11	135.85	3.87
11.	2011-12	39	319.94	38.76	12.18
12.	2012-13	24	794.86	118.13	3.01
13.	2013-14	49	457.49	28.22	10.71
14.	2014-15	45	961.43	215.18	4.68
15.	2015-16	42	708.86	5.49	5.91
	CGR	-1.64 **	6.34****	17.55**	7.52***
	CV	28.60	59.98	79.73	84.29
	% change from base year 2001-02	20.75	70.88	54	66.55

Note; *, **, and*** indicate significance at 10, 5 and 1 percent level of significance

Table.2 Country wise triennium average export and per kg price realization before and after creation of Agri Export Zone (2005-2008 & 2013-2016)

S. No.	Country	2005-2008		2013-2016		% change
		Qunty (Kg)	Rs. / Kg	Qunty (Kg)	Rs. / Kg	
1.	Bangladesh	0	0	555500	77.63	
2.	Nepal	66.67	24.99	175430	25.31	1.28
3.	UAE	3684	31.46	18700	50.80	61.47
4.	Germany	203.34	23.77	600	50.00	110.35
5.	UK	2733.34	54.25	400	255.00	370.04
6.	Oman	706.67	29.86	0	0.00	
7.	Canada	766.67	18.39	60	66.67	262.53
8.	Bahamas	0	0	260	65.38	
9.	Bahrain	10096.67	44.55	130	61.54	38.13
10.	Total	170453	46.85	751133.34	136.81	192.01

Source: Export statistics for agro & food product 2016-17 & NHB Database 2015

Table.3 Price spread and Producer’s share in consumer’s rupee under different marketing channels of Litchi

S.N	Particulars	Channel -I	Channel -II	Channel -III	Channel -IV
1.	Total marketing cost	900.00	1500.00	1700.00	2000.00
2.	Total marketing margin	-	250.00	450.00	750.00
3.	Price spread	900.00	1500.00	1900.00	2500.00
4.	Producer’s share	83.64	72.72	65.45	54.54
5.	Marketing efficiency	5.11	2.66	1.89	1.02

The study concluded that the export trend from India and Muzaffarpur was together significant during the period in both quantity and value terms. However, the export to European countries was very less in volume before and after formation of agri export zone but it is quite profitable as per kg price has shown highest increase. The marketing efficiency for channel I, II, III, and IV were 5.11, 2.66, 1.89 and 1.02 respectively. It is observed from efficiency index that channel I was the most efficient one. This is because of that fact that channel I does not involve any intermediary. The channel II is the least efficient one because of the length of marketing channel, multiplicity of margin to the intermediaries and losses due to spoilage.

References

Anonymous (2010) Litchi resource mapping, Bihar. Report submitted to State Horticulture Mission, Bihar “<http://www.horticulture.nic.in>”

Anonymous (2010). Indian Horticulture Data Base, National Horticulture Board Publication, Gurgaon :80-85

Arora, V.P.S. (2005). Marketing and Export of Horticultural products of Uttaranchal; Status, Potential and

Strategies. *Indian Journal of Agricultural Marketing (conf. Spl.)*, 19 (2): 194-206.

Bagde, N.T, Autkar, V.N and Vyawahare, C.A (1996): Dynamics of Marketing of selected fruit in Nagpur.

Charturvedi, Tamanna and S.P.R., Chaurasia. (1999) Identification of niche Markets for some Export competitive Indian fruit. *Indian Journal of Agricultural marketing*, 13(2):15-21.

Choubey, Manesh. (1997) A study on Production and Marketing of litchi (*Litchi chinensis*) in Bihar. M.Sc. (Agri.) (Unpublished) Thesis, Department of Agricultural Economics, Indian Agricultural Research Institute, New Delhi.

Kumar, Suresh. (1997). A study of dynamics of production and marketing of litchi in Muzaffarpur district of Bihar. M.Sc. (Agri.) (Unpublished) Thesis, Rajendra Agricultural University, Pusa

Prasad, Umasankar (2001). An Economic Analysis of Production and Marketing of Litchi in Muzaffarpur district of Bihar, Ph. D. Thesis (Unpublished), Department of Agricultural Economics, Veer Bahadur Singh

- Purvanchal Jaunpur, U. P.
Singh, B.B. Yadav, R.N, Singh, L N, and Kumar, Suresh. (1997). Production and Export of Litchi in Bihar need techno Management and Improvement. Indian Journal Agricultural Marketing. Vol.-2, 1and 2 pp 46 Jan.-Aug. 1997.
- Vishal, V. (2012). Economic of production and Marketing of Litchi in Muzaffarpur district of Bihar. M. Sc. (Agricultural Economics) Thesis, Department of Agricultural Economics, Mahatma Phule Krishi Vidyapeeth Rahuri, Maharashtra