

LITCHI

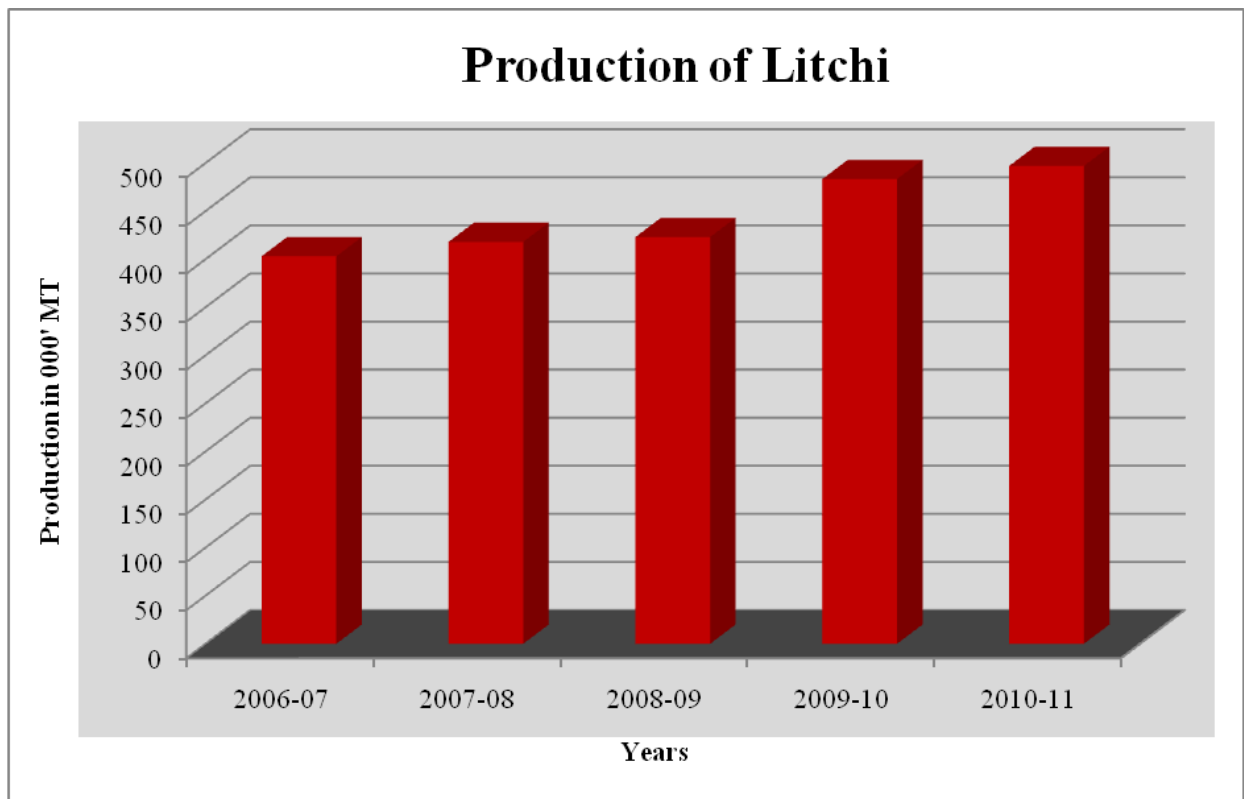
1. Introduction

Litchi (*Litchi chinensis*) is most liked and relished fruit of India. Litchi is cultivated in an area of 78 thousand ha and total production is around 497 thousand tons. There is a sizeable increase in acreage and production of litchi in India. Cultivation of litchi has increased from 72 thousand ha in 2008-09 to 78 thousand ha in 2010-11. In terms of production; however, it has increased from 423 to 497 thousand tons. The total production of litchi is concentrated mainly in Bihar, West Bengal, Assam and Jharkhand and to a smaller extent in Tripura, Punjab, Uttarakhand and Orissa.

Showing the Area Production and Productivity of Litchi in India

table 6.1: Showing the area production and productivity of litchi in India			
Year	Area	Production	Productivity
2006-07	65.00	403.00	6.20
2007-08	69.00	418.00	6.10
2008-09	72.00	423.00	5.90
2009-10	74.40	483.30	6.50
2010-11	78.00	497.00	6.40

Source: Indian Horticulture Database 2011



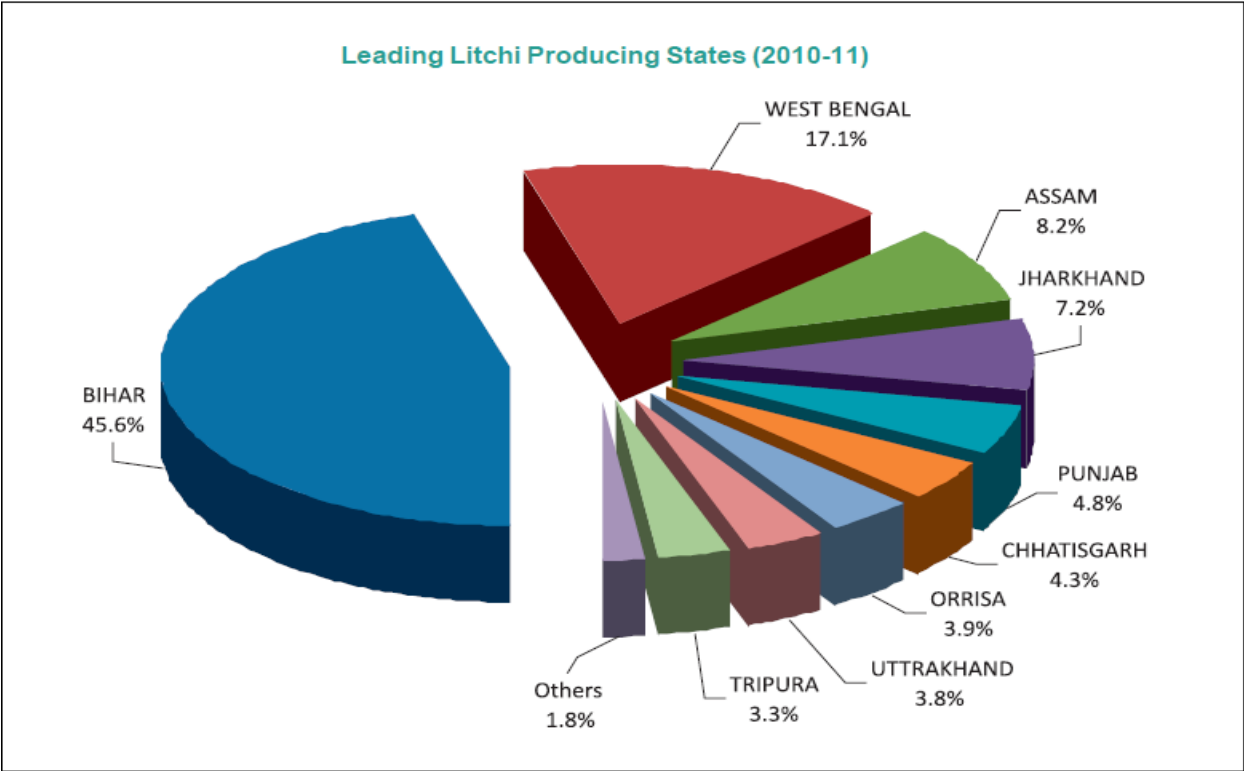
2. Major Producing States with Production of Last Three Years

Bihar is the leading state in litchi production (227.0 thousand tons.), followed by West Bengal (85.1 thousand tons.) and Assam (40.5 thousand tons.). Production ranges from 19.2 thousand tons. in Orissa to 35.9 thousand tons. in Jharkhand. Most plantations in Uttarakhand are young and have yet to start bearing.

Area, Production and Productivity of Leading Litchi Growing States in India

STATE	AREA (000'ha)			PRODUCTION (000'tons)			PRODUCTIVITY (tons/ha)		
	2008-09			2009-10			2010-11		
	Area	Prod	Pdy	Area	Prod	Pdy	Area	Prod	Pdy
Bihar	30.50	216.90	7.10	30.60	215.10	7.00	31.10	227.00	7.30
West Bengal	8.40	81.20	9.70	8.40	82.40	9.80	8.60	85.10	9.90
Assam	4.80	34.90	7.20	5.10	39.20	7.70	5.20	40.50	7.80
Jharkhand	4.30	20.30	4.80	4.30	51.10	12.00	4.30	35.90	8.40
Punjab	1.50	21.30	13.90	1.60	22.40	14.10	1.60	23.90	14.70
Chhatisgarh	0.00	0.00	0.00	3.00	17.80	6.00	3.90	21.40	5.50
Orrisa	4.20	13.00	3.10	4.30	17.10	4.00	4.40	19.20	4.40
Uttrakhand	8.80	15.30	1.70	9.10	15.70	1.70	9.30	18.70	2.00
Tripura	2.80	14.40	5.10	2.80	17.00	6.10	2.90	16.60	5.60
Others	6.60	6.20	0.90	5.20	5.50	1.10	6.30	9.10	1.40
Total	71.90	423.40	5.90	74.40	483.30	6.50	77.60	497.30	6.40

Source: Indian Horticulture Database, 2011



3. Showing the Varietal Characteristics of Commercially Grown Litchi

Variety	Characteristics
Shahi	Fruits are globous- heart or obtuse in shape. The colour is rose madder and fuchsia purple background with red tubercles at ripening and the weight ranges from 20-25 gms. with T.S.S. of 19-22° brix
Early Bedana	Fruits are oval or heart shaped. The colour is uranium green with carmine red tubercles at maturity and the fruit size is medium, weight ranges from 15 to 18 gms. with T.S.S. of 17.2-19.8° brix
Late Bedana	Fruits are conical in shape. The colour is vermilion to carmine with dark blackish-brown tubercles at maturity and the fruit size is medium, with T.S.S. of 18-20° brix
Bombai	Fruits are obliquely heart shaped. The colour is carmine red and the fruit size is large, and weighs 15-20 gms. with T.S.S. of 17° brix

4. Good Agricultural Practices (GAP)

- Enhancing establishment of air layered plants in the field.
- Adoption of high density planting.
- Conservation of soil moisture with mulching.
- Integrated nutrient management.

- Irrigation frequency to be maintained to avoid fruit cracking.
- Integrated pest and disease management.

5. Harvesting Season of Crop in Leading States



STATE/UT'S	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Tripura												
Assam												
West Bengal												
Bihar												
Jharkhand												
Uttarakhand												

*The above graph shows Harvest pattern in leading Litchi growing states

6. Arrival pattern in market

The arrival pattern of Litchi in Leading States are given below in the table.

S.No.	States	Season of availability
1	Tripura	15th April to end of April
2	Assam	1st May to 3rd week of May
3	West Bengal	1st May to 3rd week of May
4	Bihar	3rd week of May to 2nd week of June
5	Jharkhand	3rd week of May to 2nd week of June
6	Uttarakhand	2nd week of June to 4th week of June
7	Punjab	3rd week of June to last week of June
8	Himachal Pradesh	3rd week of June to last week of June

7. (a) Concentrated Pockets

The details of concentrated pockets of Litchi in different states are listed below in table .

Shows Concentrated Pockets o Litchi growing States

State	Districts
Bihar	Muzaffarpur, Vaishali, Sitamrhi, East Champaran, West Champaran, Katihar, Gopalganj, Siwan, Samastipur, Saran, Sheohar, Darbhanga, Madhubani Purniya,, Begusarai, Saharsa, Bhagalpur, Araria, Kishanganj, Khagariya, Madhepura, Munger
Assam	Bongoigaon, Kamrup, Golpara, Nalbari, Barpeta, Sonitpur, Nagaon, Lakhimpur, Golaghat, Jorahat ,Cachar
West Bengal	Mushirdabad, 24- Parganas, Nadia, 24- Parganas South Malda, Uttar Dinajpur, Dakshin Dinajpur, Hubli
Orrisa	Sundergarh, Sambalpur, Angul, Deogarh
Uttarakhand	Udham Singh Nagar, Champawat, Nainital, Dehradun, Tehri Garhwal, Pauri Garhwal,Haridwar
Punjab	Gurdaspur, Hoshiarpur
Tripura	West Tripura, North Tripura, South Tripura, Dhalai Tripura

(b) Catchment areas of Market

Showing the details of catchment areas of market of Litchi in leading states

States	Districts (Market)	Blocks
Bihar	Muzaffarpur	Sahebganj, Baruraj, Hursepur, Minapur, Kanti, Paru-I, Paru-II, Kurhani, Sacra, Dholi, Bochacha, Gaihati, Katra, Aurai.
	Sitamarhi	Majorganj, Pariharpur, Riga, Bathnaha, Sursnd, Bazpatti, Pupri, Nanpur, Pumra, Belsand, Bairagnia
	East champaran	Raxaul, Ramgarhwa, Chiraiya, Dhaka ,Palahi, Mehsi ,Kesriya, Chakia, Areraj, Paharpur.
West Bengal	Murshidabad	Suti, Jangipur, Raghunathganj, Lalgola, Bhagwangola,Sagardighi, Jiaganj, Lalbagh, Domkal, Bahrampur, Hariharpura, Belaanga, Nawada ,Bharatpura, Barwan,Khargram
Uttarakhand	Udham Singh Nagar	Rudrapur, Sitarganj, Khatima, Gosukuan, Chakarpar,Senapati, Bichwa, Pant Nagar, Bazpur, Kashipur, Jaspur
	Nainital	ManumaHami, Mallital, Tallital.
	Dehradun	Tapovan, Haripur, Kaiffi, Rajpur, Kishanpur, Garhi.
Punjab	Gurdaspur	Dhar, Pathankot, Batala, Phongota, Dunera, Sujampur,Madhampur, Chaki, Jakolar, Fatehgarh, Jaintipur, Bhet
	Hoshiarpur	Mukerian, Dasuya, Dholbaha, Hazipur, Namoli, Bhamotar,Dadiyal, Garhdiwala, Miani, Phuglana, Mahalpur, Lalwan
UttarPradesh	Saharanpur	Badshahrbagh, Raipur, Muzzafarabad, Kalsia, Behat,Chilkana, Rampur, Sarsawa, Pilkhani, Bhayla, Deoband, Gangoh, Lukhnauti, Nanauta

8. Criteria and Description of Grades

According to Agmark standards Litchi is classified into following classes, the table is given below :

Details of various classes of Litchi as per AGMARK Standards

Grade designation	Grade requirements	Grade tolerances
1	2	3
Extra class	Litchis must be of superior quality. They must have the shape, development and colouring that are typical of the variety and/or varietal type. They must be free of defects, with the exception of very slight superficial defects, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.	5% by number or weight of Litchis not satisfying the requirements for the grade, but meeting those of Class I grade or exceptionally coming within the tolerances of that grade.
Class I	Litchis must be of good quality. They must be characteristic of the variety and/or commercial type. The following slight defects however may be allowed provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.- slight defects in shape- slight defects in colouring;- slight skin defects Provided these do not exceed a total area of 0.25sq.cm	10% by number or weight of Litchis not satisfying the requirements of the grade, but meeting the minimum requirements.
Class II	This grade includes Litchis which do not qualify for inclusion in the higher grades, but satisfy the minimum requirements specified in general characteristics. The following defects may be allowed, provided, the Litchis retain their essential characteristics as regards the quality, the keeping quality and presentation.- defects in shape,- defects in colouring,- skin blemishes provided these do not exceed a total area of 0.5 sq. cm.	10% by number or weight of Litchis not satisfying the requirements of the grade, but meeting the minimum requirements.

PROVISION CONCERNING SIZE

Size is determined by the maximum equatorial diameter.

Grade	Minimum Equatorial diameter (in mm.)
Extra class	33
Class I	28
Class II	23

9. Packaging & its details

(a) For Export

Normally Corrugated Fibre Board boxes of capacity 2 kg and 4 kg are used for export. The detailed specifications of CFB are given below in the table.

Specification details for Corrugated Fibre Board (CFB) Boxes for packing Litchis for exports

Characteristics	Requirements	
	2 KG	4 KG
Dimension		
Material of construction	3 Ply Corrugated fibre board	3 Ply Corrugated fibre board
Grammage (g/m sq), Min (outer to inner)	*230/140/140	*230/140/140
Bursting strength kg/cm sq, Min	6	10
Puncture resistance, ozs inches/tear inch Min	100	250
Compression strength, kgf, Min	225	350
Cobb (30 minutes) g/m sq, Max	130	130

* Outer ply of duplex board

Source: Quality Assurance Manual for Export of Litchis, APEDA, New Delhi

(B) For Domestic Market

For domestic markets also, the litchis are packed in Corrugated Fiber Board boxes.

10. Distribution of produce from primary to terminal market

- Litchi grown in Bihar and West Bengal is transported to the big cities for marketing.
- Patna and Kolkata are the most important markets for dispatch of Litchi.
- Litchi produced in Bihar and West Bengal find markets in Ahmedabad, Mumbai, Pune, Nagpur, Hyderabad, Delhi, Chandigarh, and Lucknow etc.

11. Exports and export potential

A. Domestic strengths for exporting Litchi

Domestic strengths for exporting Litchi from India are detailed below:

- India is the largest producer of litchi in the world.
- India produces superior litchi varieties having high pulp to stone ratio and with high yields.
- India has been gifted with unique ripening pattern of litchi, as litchi starts ripening from 15th April in Tripura, 1st week of May in Assam and West Bengal; 3rd week of May in Bihar & Jharkhand, and season ends after ripening terminates in Punjab in last week of June. Thus, India has 2.5 months time to export litchi.
- India is in advantageous position with regard to geographical location compared to Thailand and China, as India is nearer to Europe and Gulf countries for exporting litchies to these countries.
- India has not to compete with Madagascar, South Africa and Australia as these countries produce litchi during November to February months, nor India is to compete with Israel as its litchi arrives during July to October months.
- Indian litchi is earliest to arrive, as litchi ripens 15 days earlier than Thailand and Chinese litchies ripen one month later, i.e. in June. Thus during this period there is comparatively less competition from China for exporting litchi to European markets.
- Agri Export Zones have already been set up in litchi growing areas of Bihar, West Bengal and Uttarakhand states.
- Pack houses for exporting litchi are already available in Bihar, West Bengal and Uttarakhand states.
- A specialized fumigation chamber has been set up in Malda area of West Bengal.

B. Exports

Export of litchi has increased from 161.5 tons in 2007-08 to 319.93 tons in 2011-12 (APEDA database).

Export of Litchi in the Last Five Years

Years	Qty. (ton's)	Value(in Rs. Lakh)
2007-08	161.5	63.43
2008-09	1546.49	155.94
2009-10	545.38	88.92
2010-11	1186.1	135.86
2011-12	319.93	38.77

Source : APEDA Database



C. Measures for enhancing competitiveness for exporting Litchi

Following measures are likely to enhance competitiveness of India in exporting Litchi :

- 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. Then, litchi to nearer areas like Gulf countries can be sent by reefer containers through MA cartons, if perfected.
- Residue analysis laboratory need to be set up in at least Muzaffarpur, Bihar to begin with.

12. Storage

Temperature:	2-3°C
Relative Humidity:.	90-95%
Storage Period:.	3-5 weeks.
Sensitivity to refrigeration and ethylene.	

13. Documents required for exports

a).Documents related to goods

- Invoice
- Packing List
- Certificate of origin

b).Documents related to shipment

- Mate Receipt
- Shipping Bill
- Bill of handing
- Airway Bill

c) Documents related to Payment

- Letter of Credit (L/C)
- Bill of Exchange

d) Documents related to quality of goods

- Phytosanitary Certificate
- GLOBALGAP Certification
- Health Certificate

e) Organic Certification

- Certificate indicating material produce is based on organic farming.

f) Documents related to Foreign Exchange Regulations

- GR Form: Documents required by RBI which assures to RBI that the exporter will realize the proceeds of goods within 180 days from the date of Shipment.

g) Other Document

- Bank Realization Certification (BRC): This is the advice given by Foreign Exchange Bank after the realization of money from Importer.

14. Chain of events which happen up to shipment

FLOW DIAGRAM OF ESSENTIAL OPERATIONS OF LICHTI EXPORTERS/PACKERS

- Receipt of raw material at Packhouse
- Sorting and grading Weighment
- Sulphur treatment Packing and coding Palletization/strapping of boxes Storage
- Container loading
- Transportation

15. Cost Calculation from Harvest to Packhouse to Port

The cost involved in exporting litchi is as follows (as per information collected during 2008):

(a) Procurement price*:

Variety Approx. price (in Rs./kg)

- Shahi (Grade A) : 55-60

*Price of litchis varies according to variety and month of procurement

(b) Charges for fumigation, packing, transport, etc.(below in table):

Particulars:	Rs/kg
Charges for fumigation , pre cooling, cold storage	5
Packaging cost	12
Transportation to Mumbai Airport	15
Total	32

Source: Litchi Exporters Association, Nainital, Uttarakhand.

(c) Air freight charges*:

Freight rates for reefer container are as follows:

A. Air Freight Charges – London

Weight : All Weight Group			
DEL/ LON	+300	+500	+1000 Kgs
A/F	INR 70.00	INR 66.00	INR 60.00
Surcharge	INR 11.50	INR 11.50	INR 11.50

B. Air Freight Charges – Amsterdam

Weight : All Weight Group			
DEL/ AMS	+300	+500	+1000 Kgs
A/F	INR 75.00	INR 70.00	INR 66.00
Surcharge	INR 11.50	INR 11.50	INR 11.50

C. Air Freight Charges – Dubai

Weight : All Weight Group						
DEL/Dubai	+45	+100	+250	+300	+500	+1000
A/F (SCR General)	INR 74/Kg	INR 62/Kg	INR 50/Kg	INR 50/Kg	INR 42/Kg	INR 42/Kg
A/F (SCR 0006)			INR 40/Kg	INR 40/Kg	INR 40/Kg	INR 40/Kg
AWB	Rs. 750 per AWB					

D. Air Freight Charges – Doha

Weight : All Weight Group						
DEL/Doha	+45	+100	+250	+300	+500	+1000
A/F (SCR General)	INR 75/Kg	INR 65/Kg	INR 55/Kg	INR 55/Kg	INR 45/Kg	INR 45/Kg
A/F (SCR 0006)			INR 35/Kg	INR 35/Kg	INR 35/Kg	INR 35/Kg
AWB	Rs. 750 per AWB					

E. Air Freight Charges – Muscat

Weight : All Weight Group						
DEL/Muscat	+45	+100	+250	+300	+500	+1000
A/F (SCR General)	INR 75/Kg	INR 60/Kg	INR 50/Kg	INR 50/Kg	INR 45/Kg	INR 45/Kg
A/F (SCR 0006)				INR 35/Kg	INR 35/Kg	INR 35/Kg
AWB	Rs. 750 per AWB					

F. Air Freight Charges – Singapore

Weight : All Weight Group						
DEL/Singapore	+45	+100	+250	+300	+500	+1000
A/F (SCR General)	INR 88/Kg	INR 63/Kg	INR 63/Kg	INR 44/Kg	INR 39/Kg	INR 39/Kg
AWB	Rs. 750 per AWB					

G. Air Freight Charges – Kuala Lumpur

Weight : All Weight Group						
DEL/ Kuala Lumpur	+45	+100	+250	+300	+500	+1000
A/F (SCR General)	INR 70/Kg	INR 63/Kg	INR 63/Kg	INR 55/Kg	INR 53/Kg	INR 53/Kg
A/F (SCR 0006)			INR 45/Kg	INR 45/Kg	INR 38/Kg	INR 38/Kg
AWB	Rs. 750 per AWB					

* It varies from year to year /season to season, capacity of container and distance covered.