

TOMATO

1. Introduction

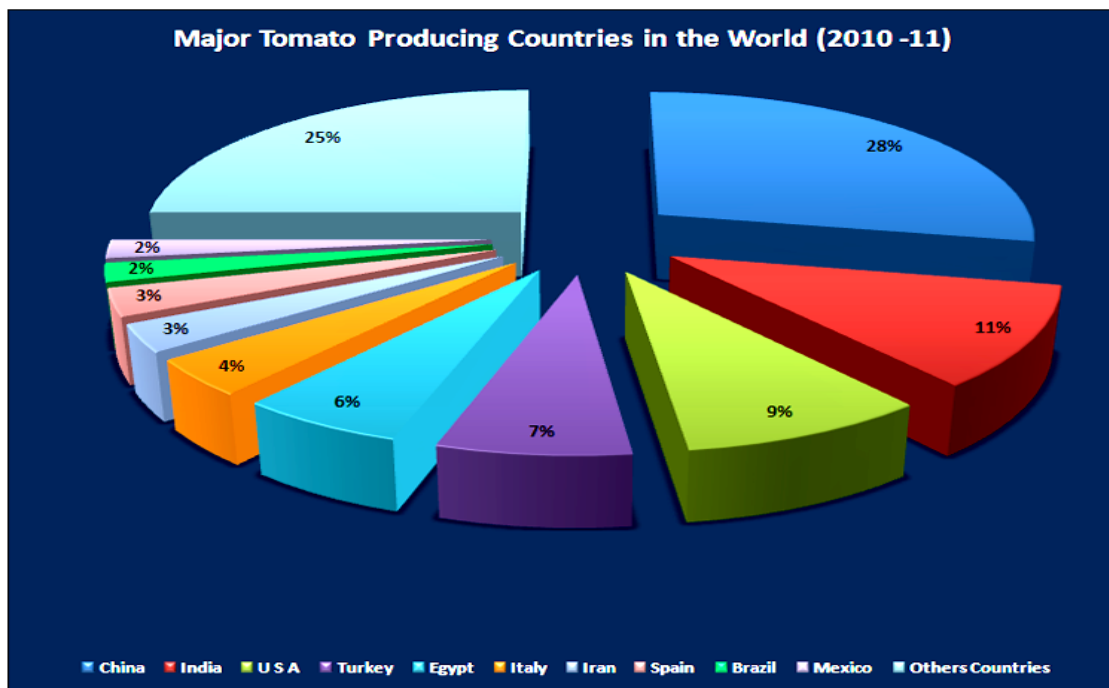
Tomato ranks third in priority after Potato and Onion in India but ranks second after potato in the world. India ranks second in the area as well as in production of Tomato.

World Scenario

The major tomato growing countries are China, USA, Italy, Turkey, India and Egypt. Total area under tomato is 4582438 thousand ha with production of 150513813 thousand tons and with productivity of 32.8 tons/ha. The latest area, production and productivity of major tomato growing countries in 2010 - 2011 is given below in the table.

Major Tomato Producing Countries In The World (2010-11)				
Country	Area ('000ha)	Production ('000 Tons)	Productivity (tons/Ha)	% Share Of World Production
China	871235	41879684	48.1	28
India	865000	16826000	19.5	11
U S A	159200	12902000	81.0	9
Turkey	304000	10052000	33.1	7
Egypt	216385	8544990	39.5	6
Italy	118822	6024800	50.7	4
Iran	146985	5256110	35.8	3
Spain	58300	4312700	74.0	3
Brazil	60772	3691320	60.7	2
Mexico	98189	2997640	30.5	2
Others	1683550	38026569	22.6	25
World Total	4582438	150513813	32.8	100

Indian Horticulture Database 2011



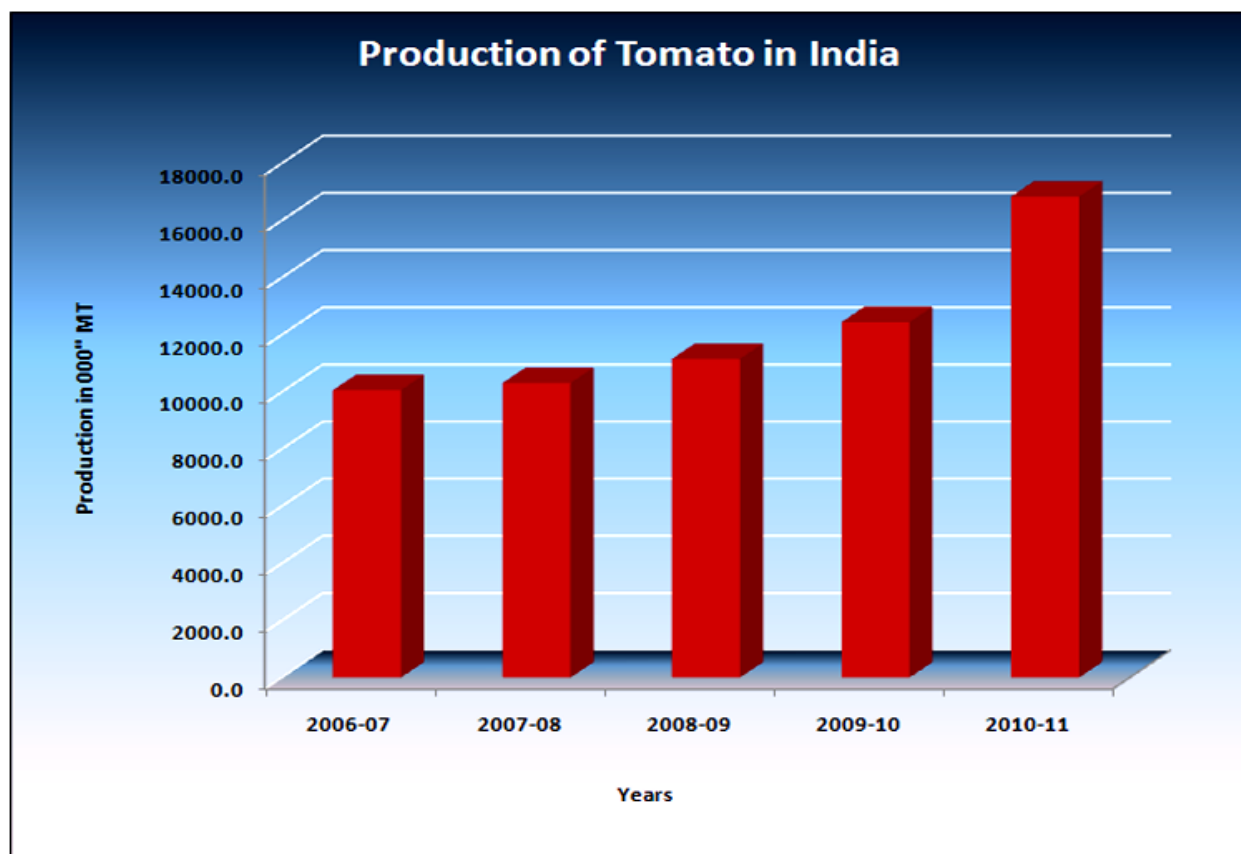
Indian Scenario

There is a sizeable increase in acreage and production of tomato in India. There is an increase from 596.0 thousand ha in 2006-07 to 865.0 thousand ha in 2010-11, while in terms of production it has increased from 10055.0 to 16826.0 thousand tons.

Showing the Area, Production and Productivity of Tomato in India

YEAR	Area (000' ha)	Production (000' tons)	Productivity (tons/ha)
2006-07	596.0	10055.0	16.9
2007-08	566.0	10303.0	18.2
2008-09	599.0	11149.0	18.6
2009-10	634.4	12433.2	19.6
2010-11	865.0	16826.0	19.5

Source: Indian Horticulture Database – 2011

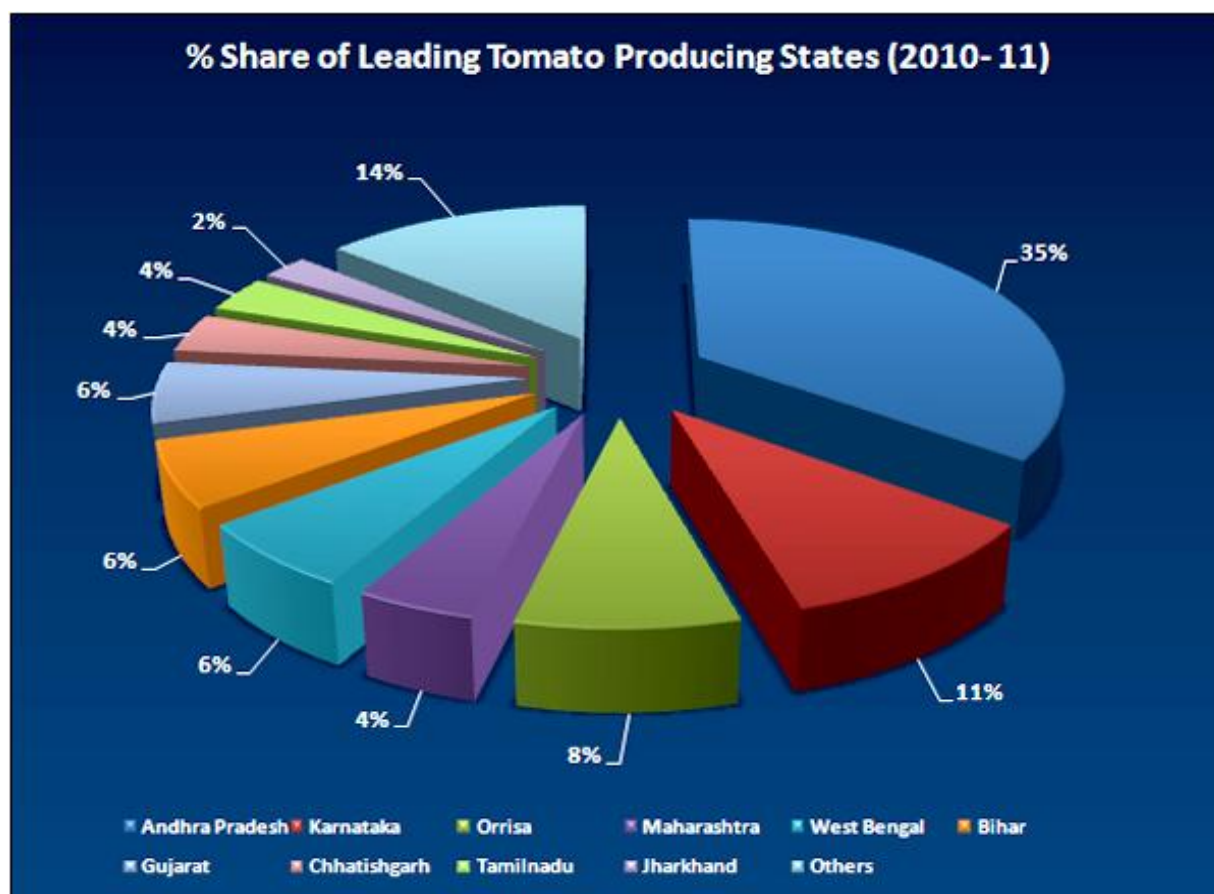


2. Major Producing States with Production of Last Three Years

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

STATEWISE AREA, PRODUCTION AND PRODUCTIVITY OF TOMATO										
State	AREA IN 000' HA			PRODUCTION IN 000' MT			PRODUCTIVITY HA/MT			% Share in Production
	2008-09			2009-10			2010-11			
	Area	Production	Pdy.	Area	Production	Pdy.	Area	Production	Pdy.	
Andhra Pradesh	74.10	1408.10	19.00	87.00	1652.10	19.00	296.30	5926.20	20.00	35.22
Karnataka	53.40	1573.80	29.50	48.30	1580.00	32.70	51.20	1756.70	34.30	10.44
Orrisa	101.10	1360.50	13.50	102.90	1394.70	13.60	96.60	1367.20	14.10	8.13
Maharashtra	33.00	732.30	22.20	50.00	1112.50	22.30	52.00	738.00	14.20	4.39
West Bengal	52.30	999.70	19.10	53.50	1050.00	19.60	54.10	1063.70	19.60	6.32
Bihar	46.40	1037.20	22.40	46.50	1043.70	22.40	46.80	1056.20	22.60	6.28
Gujarat	30.50	746.20	24.40	33.80	841.30	24.90	38.80	978.40	25.20	5.81
Chhatishgarh	39.20	420.40	10.70	41.30	600.60	14.50	42.90	627.90	14.60	3.73
Tamilnadu	0.00	0.00	0.00	26.10	519.10	19.90	27.20	580.60	21.40	3.45
Jharkhand	21.80	436.10	20.00	21.80	436.20	20.00	22.30	401.60	18.00	2.39
Others	147.20	2434.70	16.50	123.20	2203.00	17.90	136.60	2330.00	17.10	13.85
TOTAL	599.10	11148.80	18.60	634.40	12433.20	19.60	864.90	16826.40	19.50	100.00

Source : National Horticulture Board -2011



3. Description of some commercial Tomato Varieties

Shows the varietal characteristics of commercially grown Tomato varieties

Variety/ Type	Characteristics
ARTH-3	Plants determinate; fruits large, squarish round, deep red, compact; uniform ripening, harvesting starts after 80-85 days and continues upto 160-180 days; gives an average yield of 88-95 tons/ha. Suitable for table purpose.
Avinash-2	Heavy yielder, determinate, compact growing hybrid. Fruits semi oblong, medium sized, good coloured, uniform ripening.
Pusa Hybrid-1	Plants are determinate; compact with good foliage cover and prolific bearing; fruits are round, smooth and attractive. It has an added advantage of providing tomato from June to mid July.
Pusa Hybrid 4	Plants are determinate, compact with dark green foliage, good foliage cover; fruits are attractive, round smooth, average weight of 70-80grams and it shows uniform ripening, good for long transportation. Average yield 550 Qtl/Ha.
Vishal Arka	Plants are determinate; fruits are round, firm, deep red with green shoulder, average weight of 140 gram; tolerant to fruit cracking; matures in 160 days with an average yield of 75tons/Ha.

4. Good Agricultural Practices (GAP)

- Raising of seedlings.
- Nutrient management.
- Use of plant growth regulators for better yield.
- Plant protection.

5. Harvesting Season of Crop in Leading States

	-Lean Period		-Peak Period		- Throughout Year
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STATE/UT'S	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Andhra Pradesh	Yellow	Green	Green	Yellow				Yellow	Green	Green	Green	Yellow
Karnataka	Green	Green	Yellow									Yellow
Orrisa	Yellow								Yellow	Yellow	Green	Green
Maharashtra	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan
West Bengal	Green	Yellow	Yellow								Yellow	Green
Bihar	Green	Green	Yellow	Yellow						Yellow	Yellow	Green
Gujarat	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan
Chhatishgarh	Green	Green	Yellow	Yellow	Yellow				Yellow	Yellow	Green	Green
Tamilnadu	Yellow	Green	Yellow		Yellow	Green	Yellow		Yellow	Green	Yellow	

*The above graph shows harvest pattern in leading Tomato growing states.

6. Arrival pattern in market

In Gujarat and Maharashtra tomatoes are available round the year in one pocket or the other. By adopting suitable agro techniques, the tomato can be made available throughout the year.

Month wise availability of Tomato

Period of Harvest	Areas
January- March	Bihar, Eastern UP, MP, Orissa, foot hills of Uttarakhand, Andhra Pradesh, Assam
April- May	Haryana, Punjab, Karnataka, Rajasthan
June-July	H.P. Uttarakhand, Tamil Nadu, Punjab, Gujarat
August-September	Andhra Pradesh, Himachal Pradesh, Uttarakhand, Maharashtra, Gujarat
October-November	Chattisgarh, Tamil Nadu
December	Andhra Pradesh, Rajasthan, Chattisgarh, Madhya Pradesh, Orissa, Rajasthan

7. (a) Concentrated Pockets

The details of concentrated pockets of Tomato in different states are listed below:

Shows concentrated pockets of Tomato in Tomato growing states.

State	Districts
Maharashtra	Nasik, Ahmednagar, Pune, Sholapur, Satara, Sangli, Nagpur.
Karnataka	Kolar, Bangalore, Belgaum.
Andhra Pradesh	Kurnool, Rangareddy, Prakasam, Mehboobnagar.
Bihar	Muzzaffarpur, Vaishali, Mandya.
West Bengal	Puralia, Nadia, Bankura, Burdhan
Tamil Nadu	Dharmapuri, Salem
Gujarat	Valsad, Surat, Navsari, Kheda, Ahmedabad.

(b) Catchment Areas of Market

Showing the details of catchment Areas of Markets of Tomato in Leading States

States	Districts (Market)	Blocks
Maharashtra	Pune	Junnar, Ambegaon, Ghod, Rajgurunagar, Wadgaonsirur, Mulshi, Welhe, Purandhar, Bhor, Baramati, Indapur, Daund, Saswad.
	Nasik	Kalvan, Peint, Igatpuri, Sinnar, Niphad, Yeola, Nandgaon, Satana, Furgana, Dindori, Melgaon.
	Satara	Mahabaleshwar, Khandala, Wai, Phaltan, Koregaon, Khata, Patan, Karad, Vadug
	Sangli	Atpadi, Khanapur, Islampur, Shirala, Valva, Tasgaon, Kavathe, Mahankal

Karnataka	Bangalore	Sonnenahali, Bettenhalli, Chokkanhalli, Baglur, Nagarur, Shivanapura, Tavarkere, Maragondahalli, Anekal
	Belgaum	Athni, Arkali, Chikodi, Mukeri, Bailhongal, Ramdurg, Khauapur
Andhra Pradesh	Kurnool	Emmiganuru, Kappagalu, Alur, Adoni, Atmakpur, Pattikonda, Dhone, Koilkuntla, Banganpalli, Allagadda
	Prakasam	Erragondapalem, Markopur, Giddalur, Tarlupadu, Podile, Darsai, Baulipali, Chundi
	Mehboobnagar	Kollur, Keshampat, Mughalgidda, Karnul, Wanparti, Atmakur, Gadwall, Alampur, Kolhapur, Achampet, Kondangol.
Bihar	Muzaffarpur	Sahebganj, Baruraj, Hursepur, Minapur, Kanti, Parui, Paruii, Kurhani, Sacra, Dholi, Bochacha, Gaihati, Katra, Aurai
	Vaishali	Kalyanpur, Lalganj, Goraul, Mahuwa, Patepur, Desri, Bidpur
West Bengal	Puruliya	Jhalida, Jalpur, Para, Nituria, Santuria, Kashipur, Hura, Puncha, Manbazar, Baghmundi, Raghunathpur.
	Nadia	Karimpur, Tehata, Kaliganj, Nakasipara, Chapra, Krishnanagar, Shantipur, Ranaghat, Chakdaha, Kalyani.
Tamil Nadu	Dharmapuri	Pennagaram, Harur, Pappireedipatti, Palakkodu, Pochampalli
	Salem	Mettur, Yercaud, Idappadi, Omalpur, Attur, Gangavalli, Sankagiri
Gujarat	Valsad	Kadiyan, Zoz, Kikawada, Nimeta, Tundav, Kadachhala, Nasvadi, Kwant, Dabhoi. Karjan, Sinor, Ambadunger, Vadodara, Sankheda
	Surat	Mangrol, Umarwada, Nizer, Olpal, Kamrej, Mahuva, Valod, Bardoi, Buhari, Umra, Tadkeshwar.
	Ahmedabad	Mandal, Rampura, Samand, Bavia, Dholka, Dhandhkulla, Ranapur

8. Criteria and description of grades

Details of grade designation and sizing of Tomato as per AGMARK standard

Grade Designation	Grade Requirements	Provision concerning sizing	Grade Tolerances
1	2	3	4
Extra class	Tomatoes shall be of superior quality. They shall have firm flesh and must be characteristics of the variety as regards shape, appearance of the produce, the quality, the keeping quality and presentation in the package.	As per table A	5% by number or weight of tomatoes not satisfying the requirement of the grade, but meeting those of class I or exceptionally, coming within the tolerances of that grade.
Class I	<p>Tomatoes shall be of good quality. They shall have reasonably firm flesh and shall be characteristics of the variety as regards shape, appearance and development. They must free of cracks and visible green back. The following slight defects may be there provided these do not affect the general appearance of the produce, the quality, the keeping quality and the presentation in the package.</p> <ul style="list-style-type: none"> -a slight defect in shape and development; -a slight defect in colouring; -slight skin defects; -very slight bruises; <p>“ribbed” tomatoes may show:</p> <ul style="list-style-type: none"> -no excessive protuberances; -small nonlignified umbilical scars -Suberization of the stigma upto 1 sq. cm -no more than 1 headed scar -umbilical lignified scars not greater than 1 sq.cm or linear scar no longer than 2/3 rd of the greatest diameter of the fruit 	As per table A	10% by number or weight of tomatoes not satisfying the requirements of the grade, but meeting those of class II or, exceptionally, coming within the tolerances of that grade.

Class II	<p>Tomatoes shall be reasonably firm flesh and shall be characteristic of the variety(but may be slightly less firm than in class I) and must not show unhealed cracks. Following defects may be there provided the tomatoes retain their essential characteristics as regards the quality, the keeping quality and presentation.</p> <ul style="list-style-type: none"> -defects in shape, development and colouring; - skin defects or bruises, provided the fruit is not seriously affected; - healed cracks not more than 3 cm in length. <p>“ribbed” tomatoes may show:</p> <ul style="list-style-type: none"> -more pronounced protuberances but without being misshapen; - one umbilicus; -umbilical lignified scars not greater than 2 sq. cm; - fine blossom scar in elongated form. 	As per table A	10% by number or weight of tomatoes not satisfying the requirements of the grade, but meeting the minimum requirements. In case of trusses of tomatoes, 10%by number or weight of tomatoes detached from the stalk.
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PROVISION CONCERNING SIZING

Sizing is determined by the maximum diameter of the equatorial section in accordance with following table. The provision shall not apply to “cherry” tomatoes. The minimum size is set at 35 mm for “round” and “ribbed” tomatoes and 30 mm for “oblong” tomatoes:

Details of sizing in Pomegranate Fruits

Size Code	Diameter in mm (minimum - Maximum)
1	30 - 34
2	35 - 39
3	40 - 46
4	47 - 56
5	57 - 66
6	67 - 81
7	82 - 101

9. Packaging & its details

For export purpose, tomato is first packed in consumer packs of LDPE or PP (polypropylene). Twenty consumer packs of 250 gm are placed in a 5 Kg CFB box. The specification details of CFB box is given below:

S.No.	Box Size	Dimension
1	5 Kg Box	450X265X110 mm

The details specifications are given below in the table :

Specification details for Corrugated Fiber Board (CFB) Boxes for packing Tomato for Exports

S.No.	Specification	Slide Type	Ring *Flap Tuck-In-Type	RSC(REGULAR SLOTTED CONTAINER)	Tray with LID
1	Material for construction	5-ply CFB	5-ply CFB	5-ply CFB	5-ply CFB
2	Grammage (g/m sq.)(outer to inner)	*230X140 X140X140	*230X140 X140X140	*230X140 X140X140	*230X140 X140X140
3	Bursting strength kg/cm sq.	Min. 10.00	Min. 10.00	Min. 10.00	Min. 10.00
4	Puncture resistance inches/teat inch	Min..250	Min..250	Min..250	Min..250
5	Compression strength Kg.	Min.350	Min.350	Min.350	Min.350
6	Cobb (30 minutes g/m sq.)	Max.130	Max.130	Max.130	Max.130

*Outer ply of white duplex board

Source: Post- Harvest Manuals on Export of Fruits, APEDA, New Delhi.

10. Distribution of produce from primary to terminal market

- Most of the tomatoes are produced in Andhra Pradesh, Orissa, Karnataka and Maharashtra.
- The major markets of tomatoes are Kurnool, Prakasam, Bangalore, Belgaum, Nasik, Pune, Sangli and Nagpur.
- From above markets tomatoes reach markets of Mumbai, Bhopal, Lucknow, Delhi etc for further distribution.

11. Exports and export potential

A. Domestic Strengths for Exporting Tomato

Domestic strengths for exporting Tomatoes are given below:

- India stands at fourth position in production of tomatoes next to China, U.S.A. And Turkey.
- Maximum production of tomatoes takes place in Andhra Pradesh, Orissa, Karnataka, Maharashtra, West Bengal, Bihar, Gujarat etc.
- Tomatoes are available for export throughout the year.
- High yielding F1 hybrids are being cultivated by farmers on a quite good scale
- There is excellent research support from all the SAUs and National Research Institutes like IIHR, Bangalore and IIVR (Indian Institute of Vegetable Research), Varanasi.

- Distribution of raised seedlings of F1 hybrids is quite prevalent and is getting popular among vegetable farmers.
- APEDA has established a number of Agri Export Zones for vegetables namely in Punjab, U.P., Gujarat, Bihar, Jharkhand and West Bengal for promoting exports of vegetables and infrastructure for the same is being/has been set up.

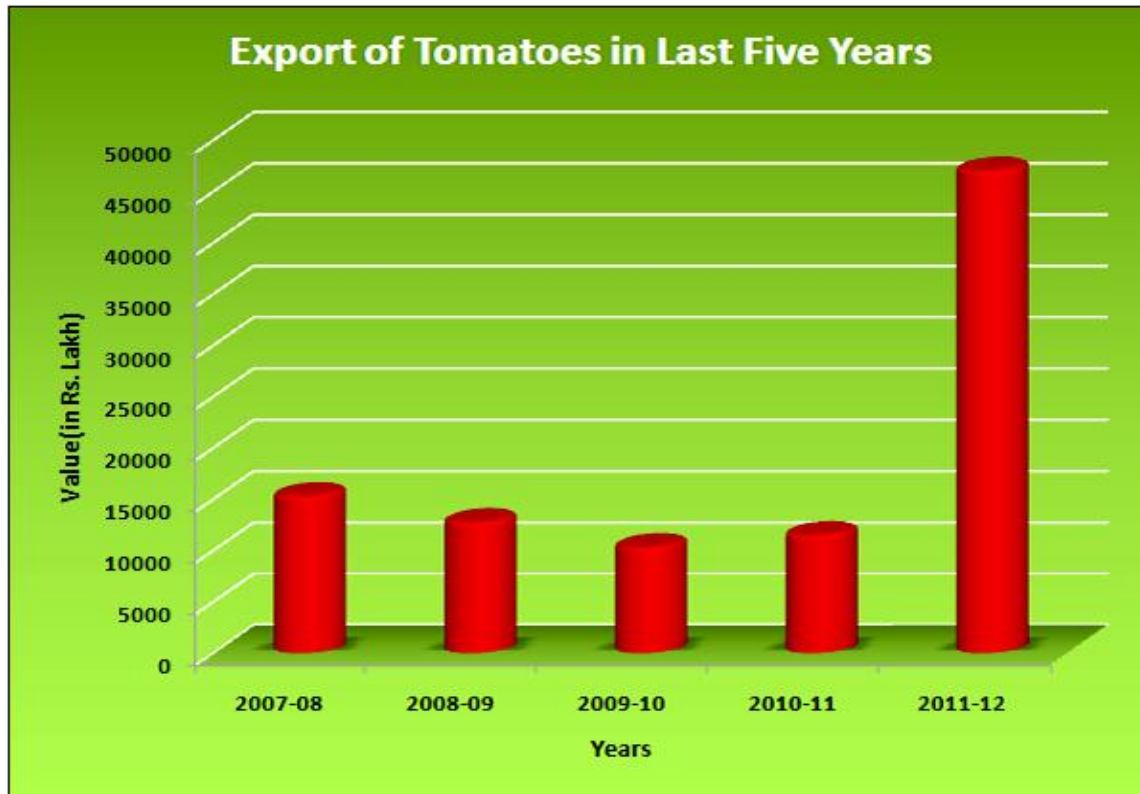
B. Exports

Export of tomatoes has increased from 1, 34,845.15 tons in 2007-08 to 2, 66,986.38 tons in 2011-12. A significant increase has been recorded of more than 97 %.

Export of Tomatoes in Last Five Years

Years	Qty. (ton's)	Value(in Rs. Lakh)
2007-08	1,34,845.15	15290.78
2008-09	1,24,617.22	12766.2
2009-10	1,05,861.62	10324.98
2010-11	65872.26	11509.98
2011-12	2,66,986.38	47030.5

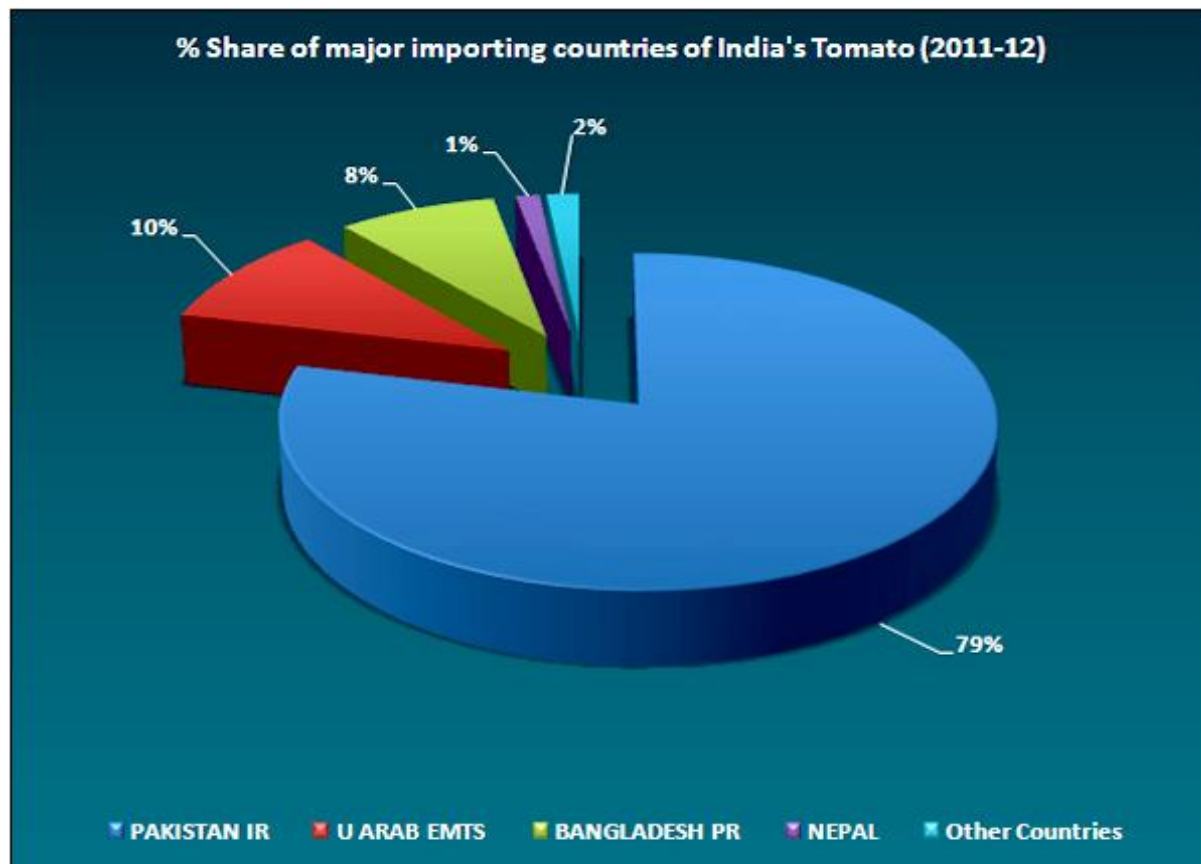
Source: APEDA Database, 2011-12



C. Countries Wise Export of Tomato from India

Export of Tomato (HS Code : 07020000)							
Qty. in MT , Value In Rs. Lacs							
Countries	2009 -10		2010-11		2011-12		% Share in Value
	Qty.	Value	Qty.	Value	Qty.	Value	
Pakistan	74,716.13	7,284.23	3,708.91	340.56	207,082.83	37,045.89	78.77
U Arab Emts	10,136.64	1,145.65	31,177.92	7,478.49	25,385.00	4,772.29	10.15
Bangladesh Pr	17,002.52	1,674.79	19,733.26	2,048.16	23,389.92	3,859.06	8.21
Nepal	2,311.95	121.26	3,268.88	227.31	5,439.14	573.03	1.22
Saudi Arab	0	0	2,261.47	539.39	967.74	269.71	0.57
Maldives	912.65	55.51	2,604.19	148.82	2,761.14	229.03	0.49
Thailand	280.26	195.99	2,209.19	532.01	827.97	207.29	0.44
Congo P Rep	0	0	0	0	830.5	24.44	0.05
Kuwait	0	0	126.01	29.89	46	11.94	0.03
U S A	0	0	61.62	5.85	85.53	8.69	0.02
Other Countries	193.86	7.54	720.81	159.5	170.61	29.13	0.06
Total	105556.95	10324.29	65,872.26	11509.98	266,986.38	47,030.50	100

Source: DGCIS



D. Measures for enhancing competitiveness for export

Following steps need to be taken on priority for enhancing competitiveness for exporting tomatoes:

- India's yields of tomatoes are very low(17.5 tons/Ha) compared to many countries like U.S.A., Spain, Italy, Egypt, Brazil etc. In order to be competitive, India must enhance productivity of quality produce.
- Further, if India has to penetrate Middle East countries effectively, it must enhance quality of tomatoes and bring it to international standards not only in produce but also in presentation, packing etc.
- Technology of CA and MA storage must be standardized perfected so that at least to GCC countries, tomato can be sent by Sea.

12. Storage

	Ripe	Unripe
Temperature:	7 - 8 °C	9 - 10 °C
Relative Humidity:.	90%	85-90%
Storage Period:.	1 week	4-5 weeks

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 (pack house up to shipment)

FLOW DIAGRAM OF ESSENTIAL OPERATIONS OF TOMATO EXPORTERS/PACKERS

- Harvesting (in the morning)
- Handling and transportation
- Unloading
- Grading and sorting
- Packed in exportable containers
- Precooled
- Cold storage
- Palletizing
- Refrigerated truck
- Shipment

15. Price prevailing in International Markets

Summary of prices for Tomato in potential markets for India.

Country	Annual Average price Range (2003-08)	
Dubai	USD/kg	0.88 to 1.77
	INR/kg	40.0-80.0

Source: Personal communication from Dubai

16. Cost Calculation from harvest to packhouse to port Cost involved in exporting tomatoes from India (as per information collected during 2008)

(a) Procurement price*:

Approx. price (Rs. /kg)	4-10
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*Price varies according to variety and month of procurement

(b) Charges for treatment, packing, transport, etc.

Particulars	Rs./kg
Precooling and cold storage	4
Handling and Packing cost	5
Transportation charge to Airport	8
Total cost	17

Source: Estimate of ITS Ltd.

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	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.