

## MANGO

### 1. Introduction

Mango (*Mangifera indica* Linn) is the most important fruit of India and is known as “King of fruits”. The fruit is cultivated in the largest area i.e. 2,312 thousand ha and the production is around 15.03 million tons, contributing 40.48% of the total world production of mango. The main mango producing states in India are Uttar Pradesh (23.86%), Andhra Pradesh (22.14%), Karnataka (11.71%), Bihar (8.79%), Gujarat (6.00%) and Tamil Nadu (5.09%). Total export of mangoes from India is 59.22 thousand tons, valuing Rs. 162.92 crores during 2010-11. India exports mango to over 40 countries worldwide. The major importing countries of India’s Mangoes during the period of 2010-11 were UAE (61.79%), Bangladesh (11.41%), UK (8.92%), Saudi Arabia(3.79%), Kuwait (2.32%), and Bahrain (2.19%) respectively.

### World scenario

Mango covers an area of 4946 thousand ha with a production of 37.12 million tons in the world during the year of 2010. India occupies top position among mango growing countries of the world and produces 40.48% of the total world mango production. China and Thailand stood at second and third position among mango producing countries in the world with 4,366 and 2,551 thousand tons respectively. The other major mango producing countries in the world during 2010 were Thailand (2550 thousand tons), Pakistan (1784 thousand tones), Mexico (1633 thousand tones) and Indonesia (1314 thousand tones) respectively. The details are given below in the table.

**Major producing countries of mango in the world (2010)**

<b>COUNTRY</b>	<b>AREA ('000ha)</b>	<b>PRODUCTION ('000 tons)</b>	<b>PRODUCTIVITY (tons/ha)</b>	<b>%age SHARE IN WORLD TOTAL PRODUCTION</b>
<b>India</b>	2312.30	15026.70	6.50	40.48
<b>China</b>	465.38	4351.29	9.35	11.72
<b>Thailand</b>	311.05	2550.60	8.20	6.87
<b>Pakistan</b>	173.70	1845.50	10.62	4.97
<b>Mexico</b>	174.97	1632.65	9.33	4.40
<b>Indonesia</b>	131.67	1287.29	9.78	3.47
<b>Brazil</b>	75.11	1188.91	15.83	3.20
<b>Bangladesh</b>	170.80	1047.85	6.13	2.82
<b>Philippines</b>	189.44	825.68	4.36	2.22
<b>Nigeria</b>	114.90	790.20	6.88	2.13
<b>Other Countries</b>	827.04	6578.07	7.95	17.72
<b>World</b>	4946.31	37124.74	7.51	

**Source: FAO**

**India Scenario**

Mango is grown almost in all the states of India. Uttar Pradesh tops the list of mango producing states. Other major producing states are Andhra Pradesh, Maharashtra, Karnataka, Bihar and Gujarat. Rest of the states has quite less production. The details are given below in the table.

**Showing the area production and productivity of mango in India**

<b>YEAR</b>	<b>AREA(000' ha)</b>	<b>PRODUCTION (000'tons)</b>	<b>PRODUCTIVITY (tons/ha)</b>
2006-07	2153.87	13733.97	6.38
2007-08	2201.38	13996.78	6.36
2008-09	2308.98	12749.77	5.52
2009-10	2312.30	15026.69	6.50
2010-11	2296.80	15188.38	6.61

Source: Indian Horticulture Database, 2010-11

**2. Major producing states with production of last three years**

Uttar Pradesh is the leading mango producing state with production of 3,623.22 thousand tons followed by Andhra Pradesh state which has production of 3,363.40 thousand tons. Then comes Karnataka 1,778.75 thousand tons, followed by Bihar and Gujarat i.e. 1,334.87 and 911.30 thousand tons respectively. Area, production and productivity of mango in different states are given in table.

**Area, production and productivity of leading mango growing states in India**

STATE	AREA (000'ha)			PRODUCTION (000'tons)			PRODUCTIVITY (tons/ha)		
	2008-09	2009-10	2010-11	2008-09	2009-10	2010-11	2008-09	2009-10	2010-11
Uttar Pradesh	271.20	276.42	267.22	3465.95	3588.00	3623.22	12.78	12.98	13.56
Andhra Pradesh	497.70	480.41	391.09	2522.00	4058.35	3363.40	5.07	8.45	8.60
Karnataka	141.29	153.80	161.57	1284.42	1694.00	1778.75	9.09	11.01	11.01
Bihar	144.07	146.03	147.01	1329.80	995.94	1334.87	9.23	6.82	9.08
Gujarat	115.69	121.52	130.10	299.82	856.74	911.30	2.59	7.05	7.00
Tamil Nadu	148.84	132.68	148.04	821.41	636.29	823.74	5.52	4.80	5.56
Orissa	164.25	177.63	190.08	449.71	577.48	642.01	2.74	3.25	3.38
West Bengal	85.971	88.14	89.53	548.92	578.00	620.17	6.38	6.56	6.93
Jharkhand	31.848	15.10	38.90	91.52	254.30	427.94	2.87	16.84	11.00
Kerala	76.70	63.75	62.20	445.40	373.17	380.86	5.81	5.85	6.12
Maharashtra	45.70	474.50	47.70	712.80	597.00	331.00	1.56	1.26	0.70
Others	585.72	182.32	6623.36	778.02	817.42	951.12	1.33	4.48	0.14
<b>Total</b>	<b>2308.98</b>	<b>2312.30</b>	<b>2296.80</b>	<b>12749.77</b>	<b>15026.69</b>	<b>15188.38</b>	<b>5.52</b>	<b>6.50</b>	<b>6.61</b>

Source : Indian Horticulture Database, 2010 -11

**3. Description of commercially grown varieties**

There are near about 30 varieties of mangoes which are grown commercially. Some of the most important varieties have been listed below in the table.

**Shows the varietal characteristics of commercially grown mangoes**

<b>Variety</b>	<b>Characteristics</b>
Alphonso	This variety is medium in size, ovate oblique in shape and orange yellow in colour. The pulp is yellow to orange in colour. It is soft, firm and fibreless. It is a mid-season variety.
Banganpalli	The flesh is firm to meaty, fibreless. Fruit is large in size and obliquely oval in shape. The colour of fruit is golden yellow. Good keeping quality and a mid season variety.
Chausa	Fruit is large in size, ovate to oval oblique in shape and light yellow in colour. It is a late variety.
Dashehri	Fruit size is medium, shape is oblong to oblong-oblique and fruit colour is yellow. The pulp is firm and fibreless and a mid season variety.
Langra	Fruit is of medium size, ovate shape and lettuce green in colour. The lemon-yellow flesh is juicy and flavourful. It is scarcely fibrous, a mid season variety.
Totapuri	Fruit size is medium to large, shape is oblong with necked base and colour is golden yellow. Flesh is cadmium yellow and fibreless, a mid season variety.
Kesar	Fruits are medium sized, flesh is sweet and fibreless. Colour is apricot yellow with red blush, an early season variety.

#### 4. Good Agricultural Practices (GAP)

- Adoption of improved cultivars.
- Adoption of high density planting in cultivars
- Regulating flowering and increasing intensity of flowering.
- Pruning malformed mango shoots at bearing stage
- Alternate bearing needs to be managed by reducing fruiting during a year by adoption of pruning and thinning practices
- Providing life saving irrigation at the critical stage of fruit growth etc.
- Providing life saving irrigation at the critical stage of fruit growth etc.
- Integrated nutrient and water management.
- Management of spongy tissue through sod mulching.
- Integrated pest and disease management practices and timely control of pests and diseases, especially mango hopper, mango mealy bug and sprays of Bavistin at fruit development stage especially after rains.



STATE/UT'S	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	
Andhra Pradesh												

STATE/UT'S	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Gujarat												
Karnataka												
Maharashtra												
Uttar Pradesh												

Fig. - 1

\*The above graph shows harvest pattern in leading mango growing states

Source: Indian Horticulture Database, 2006

## 5. Arrival pattern in market

Arrival pattern of mangoes in top five states

S.No.	States	Season of availability	Important cultivars
1.	Andhra Pradesh	Mid Feb. - mid July	Banganpalli, Totapuri, Suvarnrekha, Neelum
2.	Gujarat	April - July	Alphonso, Kesar, Rajapuri
3.	Karnataka	April - July	Banganpalli, Totapuri, Neelum, Alphonso, Pairi
4.	Maharashtra	March - July	Alphonso, Kesar, Pairi
5.	Uttar Pradesh	May - August	Bombay Green, Dashehri, Langra, Chausa, Amrapali

6. **(a) Concentrated pockets**

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

**Shows concentrated pockets of mango in mango growing states**

<b>State</b>	<b>Districts</b>
Andhra Pradesh	Krishna, Vizianagaram, West Godavari, Visakhapatnam, East Godavari, Srikakam Khammam, Nalgonda, Karimnagar, Warangal, Mahaboobnagar, Chittoor, Cuddapah, Nellore, Prakasam
Karnataka	Kolar, Bangalore, Tumkur, Chitradurga, Mysore, Hassan, Mandya, Chickmagalur
Gujarat	Valsad, Navsari, Surat, Vadodara, Bharuch, Junagadh, Amreli, Bhavnagar,
Uttar Pradesh	Lucknow, Sultanpur, Sitapur, Unnao, Hardoi, Barabanki, Faizabad, Saharanpur, Bulandshahar, Meerut, Muzaffarnagar, Bijnaur, Moradabad, Deoria, Basti, Maharajganj, Kabir Nagar, Gorakhpur, Kushi Nagar
Maharashtra	Ratnagiri, Sindhudurg, Raigarh, Satara, Sangli, Kolhapur, Latur, Nasik, Beed, Akola, Jalna, Ahmednagar, Buldhana, Osmanabad
Tamil Nadu	Teni, Dharmapuri, Salem, Tirunelveli.



**(b) Catchment areas of market**

Showing catchment areas of markets of leading mango growing states

States	Districts (Market)	Blocks
Andhra Pradesh	Warangal	Mongalapalli, Jangaon, Mahbubabad, Kottagudem, Narlappu, Gudur, Zafargarh.
	Kurnool	Emmiganuru, Kappagalu, Alur, Adoni, Atmakpur, Pattikonda, Dhone, Koilkuntla, Banganpalli, Allagadda
	Prakasam	Emmiganuru, Kappagalu, Alur, Adoni, Atmakpur, Pattikonda, Dhone, Koilkuntla, Banganpalli, Allagadda
Maharashtra	Ratnagiri	Mandargarh, Dapoli, Khed, Chiplun, Guhagarh, Sangameshwar, Langa, Rajapur, Sangva
	Raigarh	Matheran, Karjat, Khalapur, Pen, Alibagh, Panvel, Uran, Sudhagarh, Poladpur, Mangaon, Mhasla, Mahad, Roha, Murud, Srivardhan,
	Sindhudurg	Devgarh, Kankauli, Malvan, Kudal, Vengurla, Savantvadi
Gujarat	Surat	Mangrol, Umarwada, Nizer, Olpal, Kamrej, Mahuva, Valod, Bardoi, Buhari, Umra, Tadkeshwar, ,
	Valsad	Kadiyan, Zoz, Kikawada, Nimeta, Tundav, Kadachhala, Nasvadi, Kwant, Dabhoi. Karjan, Sinor, Ambadunger, Vadodara, Sankheda,
	Navsari	Gandevi, Jalalpor, Bansda, Ahond, Khanpur, Kariawadi, Satam, Saravani
Uttar Pradesh	Lucknow	Mal, Rahimabad, Bhauli, Itaunja, Mahoma, Nagram, Nigohan, Sisendi, Bijnaur, Utrahthia, Gosainganj, Jugganar, Chanhat, Bani, Alamnagar, Kakori, Bhauli
	Saharanpur	Badshahbagh, Raipur, Muzzafarabad, Kalsia, Behat, Chilkana, Rampur, Sarsawa, Pilkhani, Bhayla, Deoband, Gangoh, Lukhnauti, Nanauta
	Muzaffarnagar	Chausera, Titron, Jalalabad, Bidauli, Shahpur, Banal, Sisanli, Khatauli, Janesh, Mimpur, Kandala.
	Meerut	Mulharia, Tanda, Sakoti, Phalavada, Bashuma, Lawar, Daurala, Marware, Hastinapur, Jani, Kithaur
	Varanasi	Sindhora, Babatpur, Phulpur, Cholapur, Mirzaurad, Samath

<b>Tamil Nadu</b>	Teni	Periyakulam, Andipatti, Uttammalayam, Bodimayakkanur, Kamban, Megamali, Vadugapatti,
	Dharmapuri	Pennagaram, Harur, Pappireedipatti, Palakkodu, Pochampalli
	Salem	Mettur, Yercaud, Idappadi, Omalpur, Attur, Gangavalli, Sankagiri
	Tirunelveli	Sivagiri, Sankarankovil, Tenkasi, Virakeralampudur, Alangulam, Nangumeri, Radhapuram,

7. **Criteria and description of grades**

According to Agmark standards, mangoes are classified into following classes, as per details given in the table below :

**Details of grade designation and sizing of mango as per AGMARK standards.**

Grade designation	Grade requirements	Grade tolerances
1	2	3
Extra class	Mangoes must be of superior quality. They must be characteristic of the variety. They must be free of defects, with the exception of very slight superficial defects, provided these do not affect the general appearances of the produce, the quality, the keeping quality and presentation in the package.	5% by number or weight of mangoes not satisfying the requirements for the grade, but meeting those of Class I or exceptionally, coming within the tolerances of that grade
Class I	Mangoes must be of good quality. They must be characteristic of the variety. Mangoes may have following slight defects, 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 skin defects due to rubbing or sunburn, suberized stains due to resin exudation (elongated trails included) and healed bruises not exceeding 2,3,4,5 sq. cm. for size groups A, B, C, D respectively	10% by number or weight of mangoes not satisfying the requirements for the grade, but meeting those of Class II grade or, exceptionally coming within the tolerances of that grade.
Class II	This grade includes mangoes which do not qualify for inclusion in the higher grades, but satisfy the minimum requirements. Mangoes may have following defects, provided they retain their essential characteristics as regards the quality, keeping quality and presentation. - defects in shape, slight skin defects due to rubbing or sunburn, suberized stains due to resin exudation (elongated trails included) and healed bruises not exceeding 4,5,6,7 sq. cm. for size groups A, B, C, D respectively	10% by number or weight of mangoes not satisfying the requirements of the grade, but meeting the minimum requirements.

In Class I and Class II, scattered suberized rusty lenticels, as well as yellowing wed. of green varieties due to exposure to direct sunlight, not exceeding 40% of the surface and not showing any signs of necrosis are allo

#### **PROVISION CONCERNING SIZE**

Size is determined by the weight of the fruit, in accordance with the following table :

##### **Details of sizing in mango**

<b>Size Code</b>	<b>Weight in grams (minimum)</b>	<b>Maximum permissible difference between fruits within the package(in grams)</b>
A	100-200	50
B	201-350	75
C	351-550	100
D	551-800	125

#### **8. Packaging & its details**

##### **(A) For Export**

- Each individual fruit of mango will be enclosed in a clean, white, soft, expandable and netted type polystyrene sleeve to prevent bruising before packing in a box.
- The mangoes must be packed in insect-proof boxes. If ventilated boxes are used, all the ventilator openings of the box should be covered with insect-proof screen and all the sides of box should be sealed with adhesive tape to prevent any entry of pests.
- The materials used inside the package must be new, clean, and of a quality such as to avoid causing any external or internal damage to the produce.
- The use of materials, particularly of paper or stamps bearing trade specifications is allowed, provided the printing or labeling has been done with non-toxic ink or glue.
- Mangoes shall be packed in each container in compliance with the Recommended International Code of Practice for Packaging and Transport of Fresh Fruits and Vegetables (CAC/RCP 44-1995, Amd. 1-2004).

**Specification details of Corrugated Fibre Board boxes are given in the following table.**

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

Characteristics		Requirements			
S.N.		Ring & Flap(4 kg)	Full Telescopic (4 kg.)	Ring Flap(8 kg)	Full Telescopic (8 kg)
1.	Material of construction	3 Ply Corrugated fibre board	3 Ply Corrugated fibre board	5 Ply Corrugated fibre board	5 Ply Corrugated fibre board
2.	Grammage( g/m sq),Min (outer to inner)	*230/140/140	*230/140/140	*230/140/140	*230/140/140
3.	Bursting strength kg/cm sq, Min	6.50	6.50	10.50	6.50
4.	Puncture resistance, ozs inches/tear inch Min	110	110	280	110
5.	Compression strength, kgf , Min	275	275	250	250
6.	Cobb (30 minutes) g/m sq, Max	130	130	130	130

\* Outer ply of duplex board

Source: Post- Harvest Manual for Export of Mangoes, APEDA, New Delhi.

**(B) For domestic market**

For domestic market, usually mangoes are packed in wooden boxes, details of which are given below. However, Alphonso and Kesar are packed in CFB boxes.

Type of Carton	Inner Dimension(cm)	Capacity (kgs)
Wooden crates	45X30X30 (Ratnagiri)	16-18
	21.6X21.6X42 (Malihabad )	10-11

**9. Distribution of produce from primary to terminal market**

- Mangoes grown in different parts of the country are transported to the big cities for marketing.
- The fruits produced in Andhra Pradesh and Tamil Nadu find markets in Nagpur, Bombay, and Calcutta.
- The important wholesale mango markets in India are Calcutta, Delhi, Bombay, Madras, Ahmedabad, Pune and Nagpur.
- Mangoes for these big markets are usually collected at the central places in all the mangogrowing areas, e.g., in Uttar Pradesh, Lucknow and Varanasi; in Gujarat, Gandevi, Gadat and Amalsar talukas; and in Maharashtra, Ratnagiri and Vengurla.
- Delhi and Bombay are the most important markets for despatch of mangoes. At Delhi all the mangoes are assembled at Sabzimandi, Ashoka market, and at Bombay at Crawford and Byculla markets for distribution.

## 10 Exports and export potential

### A. Domestic strengths for exporting mango

Domestic strengths for exporting mango from India are listed below:

- India occupies top position in total production among mango growing countries of the world.
- India cultivates a wide variety of mangoes; some of them are very colourful and attractive with par excellence edible quality.
- Mangoes are cultivated with sizeable production in almost all the states i.e. Andhra Pradesh, Uttar Pradesh, Maharashtra, Gujarat, Tamil Nadu etc.
- Transfer of technology for cultivation of mango is easy as in many states; farmers have formed associations/cooperatives.
- In Maharashtra state mango growers are quite innovative.
- Agri Export Zones for facilitating exports have been established in almost all mango growing areas.
- Packhouses on modern lines have been provided in all mango exporting regions i.e. in Ratnagiri and Sindhudurg in Maharashtra and in Navsari and Borsad in Gujarat for Alphonso variety; in Latur and Aurangabad for Kesar mango; in Saharanpur and Malihabad in U.P. for Dashehari and Chausa mangoes.
- Facilities for facilitating mango exports like Post-harvest Management Centre have been established at Malihabad and Saharanpur. Similarly a mango Export Facility Centre has been established at Ratnagiri.
- Mango farmers of Alphonso and Kesar are already being trained in GLOBALGAP requirements.
- Mango growers of Saharanpur have already branded their product as “NAWAB” mango.
- Facilities for Vapour Heat Treatment and irradiation for eliminating fruit fly have already been set up.
- India is in advantageous position, as it is nearer to Middle East countries compared to Australia, Kenya etc. main suppliers in Middle East.

## B. Exports

India's Export of Mangoes has been increased by Rs. 209 crores in 2010-11 from Rs 142 crores in 2006-07, representing a growth of 47%. The major 5 importing countries of India's Mangoes were UAE, Bangladesh, UK, Saudi Arabia, and Nepal respectively; these countries alone comprises of around 87% of India's total export of Mango. The major importing regions of India's Mangoes were WANA, South Asia and EU-27 countries respectively. The details of export are given below:

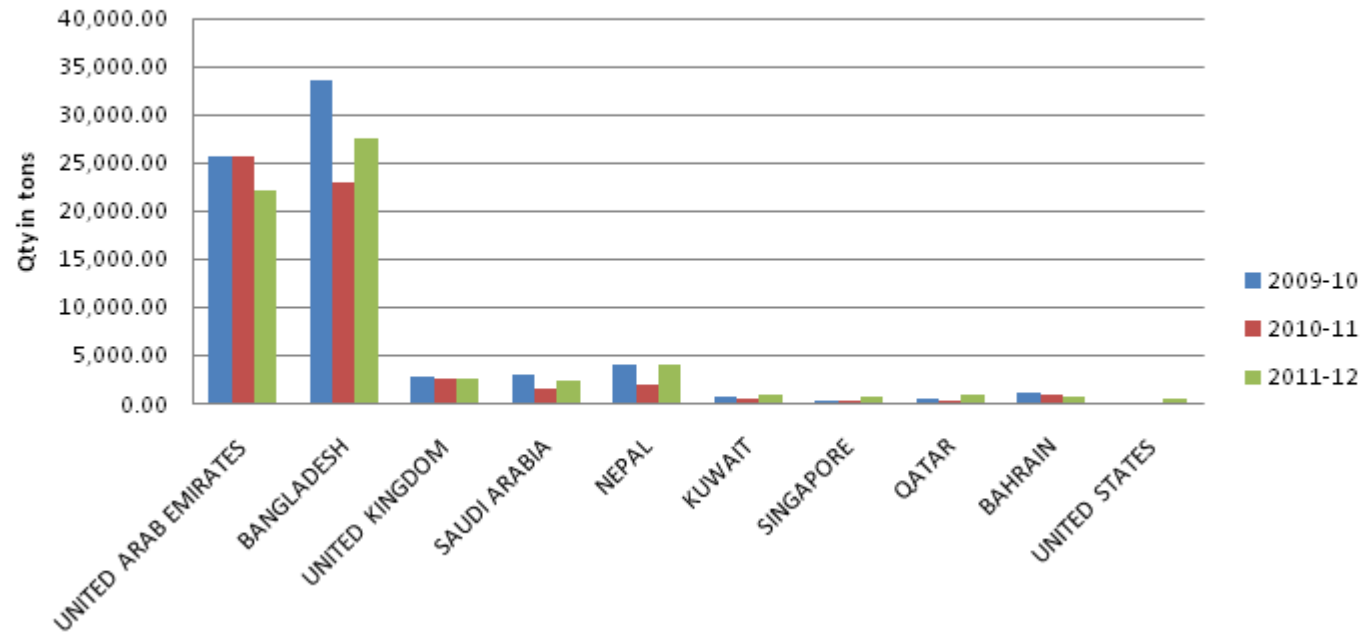
### Country wise Export of Mango for last 3 years :

India Export of Mango to top 10 Countries								
Country	2009-10		2010-11		2011-12		%age growth in Qty on previous year	%age share in 2011-12
	Qty	Value	Qty	Value	Qty	Value		
UAE	25,608.15	10,382.97	25,725.00	10,066.87	22,013.88	10,736.68	-14.43	51.19
Bangladesh	33,549.90	3,295.82	23,049.69	1,859.43	27,599.48	4,058.91	19.74	19.35
United Kingdom	2,958.65	1,746.88	2,723.54	1,453.81	2,532.42	1,641.64	-7.02	7.83
Saudi Arabia	3,147.13	1,345.40	1,592.18	617.99	2,388.63	1,169.70	50.02	5.58
Nepal	4,058.15	378.63	1,991.26	209.58	3,925.74	671.42	97.15	3.20
Kuwait	804.15	520.09	580.29	377.79	731.24	539.7	26.01	2.57
Singapore	367.58	190.28	387.81	206.04	599.27	358.11	54.53	1.71
Qatar	659.02	512.78	374.97	199.05	816.1	328.76	117.64	1.57
Bahrain	1,238.49	402.33	980.66	355.42	623.69	289.95	-36.40	1.38
United States	175.4	256.58	136.7	193.94	353.18	221.29	158.36	1.06
<b>Total Mango Export</b>	<b>74,460.63</b>	<b>20,053.96</b>	<b>59,220.78</b>	<b>16,292.13</b>	<b>63,441.27</b>	<b>20,974.29</b>	<b>7.13</b>	<b>100</b>

Source: DGCIS



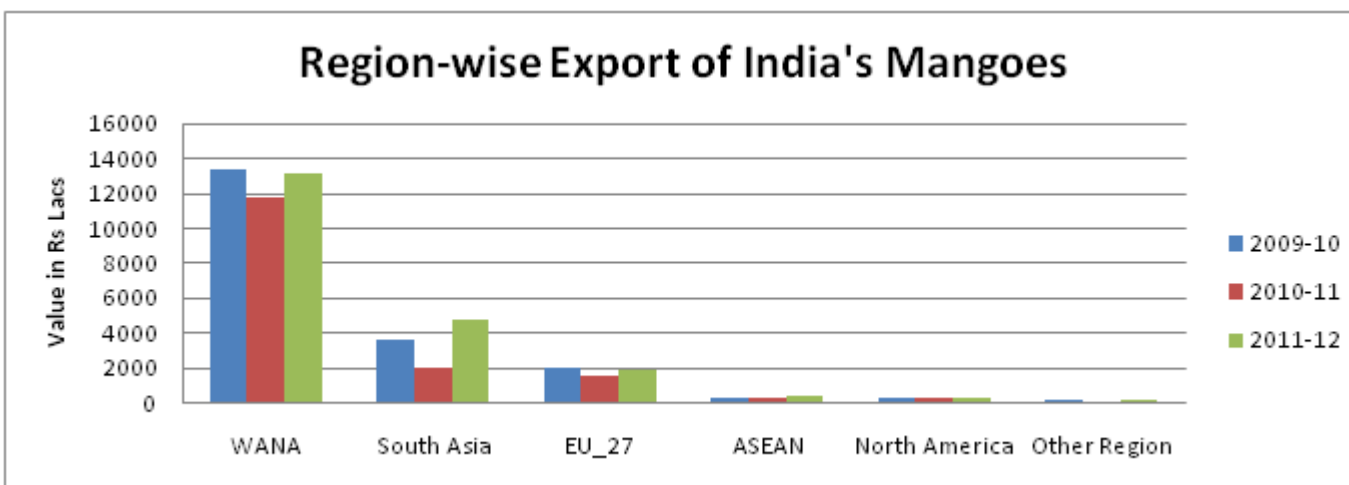
## India Export of Mango to top 10 Countries



Region wise Export of mango for last3 years :

Regionwise Export of Mangoes from India						
Region Name	Quantity in MT; Value in Rs.Lacs					
	2009-10		2010-11		2011-12	
	Quantity	Value	Quantity	Value	Quantity	Value
WANA	31766.07	13378.07	29420.42	11723.43	26766.36	13194.46
South Asia	37647.50	3689.74	25075.22	2080.69	31542.27	4744.69
EU_27	3473.92	2014.94	3059.60	1625.02	3060.53	1911.48
ASEAN	803.26	355.90	797.10	377.93	965.74	498.02
North America	430.59	340.74	563.32	319.67	758.94	371.20
NE Asia	153.25	108.24	121.60	68.13	238.53	164.75
Other We Countries	148.74	150.60	157.19	79.86	97.95	84.81
CIS Countries	2.69	1.49	8.00	8.14	1.38	1.43
Latin America	0.00	0.00	0.00	0.00	2.40	1.38
Southern Africa	0.05	0.02	4.35	1.30	3.58	1.25
East Asia	22.80	5.10	0.00	0.00	3.61	0.83
West Africa	0.53	0.85	0.00	0.00	0.00	0.00
East Africa	0.00	0.00	2.17	1.17	0.00	0.00
East EuropeEast Europe	1.40	0.11	0.00	0.00	0.00	0.00
CARs Countries	0.94	2.19	0.00	0.00	0.00	0.00
Central Africa	3.32	1.25	0.00	0.00	0.00	0.00
Unspecified	5.54	4.72	11.80	6.79	0.00	0.00
<b>Total</b>	<b>74460.60</b>	<b>20053.96</b>	<b>59220.77</b>	<b>16292.13</b>	<b>63441.29</b>	<b>20974.30</b>

Source: DGCIS Annual Export



## C Export potential

### i) WANA Countries

India exported 26766 tons of mangoes to WANA countries during 2011-12. The major country market of India's Mangoes in WANA Region during the period were UAE (22013.88 tons), Saudi Arabia (2388.63 tons), Kuwait (731.24 tons), Qatar (816.10 tons) and Bahrain (623.69 tons) respectively.

However, there is tremendous scope for expanding exports to these countries, as India produces finest quality mangoes. India's total exports are substantial during March – April months and reduce significantly during May onwards because of competition from Pakistan. India must explore reducing costs Kesar variety of mango which is much more acceptable by increased productivity and make available through reefer containers,. India must target at least 50,000 to 60,000 tons of mangoes exports to WANA countries in next 4-5 years.

### ii) South Asia Countries

India exported 31542.27 tons of mangoes to South Asia countries during 2011-12. Bangladesh and Nepal were the major countries of South Asia and Imported 27599.48 tons and 3925.74 tons of India's mangos during the period.

India's Export of Mangoes to South Asia Countries						
Country	Quantity in MT; Value in Rs.Lacs					
	2009-10		2010-11		2011-12	
	Quantity	Value	Quantity	Value	Quantity	Value
Bangladesh Pr	33549.90	3295.82	23049.69	1859.43	27599.48	4058.91
Nepal	4058.15	378.63	1991.26	209.58	3925.74	671.42
Maldives	25.78	7.75	9.18	3.60	17.03	14.34
Sri Lanka DSR	0.00	0.00	0.00	0.00	0.02	0.02
Bhutan	13.68	7.55	25.00	8.04	0.00	0.00
Pakistan Ir	0.00	0.00	0.09	0.03	0.00	0.00
<b>Total</b>	<b>37647.51</b>	<b>3689.75</b>	<b>25075.22</b>	<b>2080.68</b>	<b>31542.27</b>	<b>4744.69</b>

Source: DGCIS Annual Export

### iii) EU-27 Countries

EU countries import mangoes varying from 2, 50,000 tons to 3, 50,000 tons every year. There is 15% increase in demand from the year 2006. However, during 2011-12, only 3060 tons were exported from India. Out of this, maximum quantity was exported to UK (2532 tons). India is not able to penetrate other EU countries in a significant way. The exports to EU countries so far, are more or less consistent. The main reason for the absence of upsurge of export of mangoes to EU is supply of mangoes by countries like Brazil, Peru, and Israel etc. at cheaper rates. Thus, India must lower the cost of production by increasing productivity.

Apart from above, the other reason is that the EU market has become used to appreciate only coloured mangoes. Consumers at times pay higher price for these coloured mangoes. Even superior edible quality of Indian mangoes does not get much attention before coloured mangoes like Tommy Atkins, Kent and Haden.

Realising this, Research Institutes in India have bred coloured varieties like Arka Anmol, Arka Puneet, Pusa Arunima, Ambika etc. However, their commercial productivity, acceptability in EU markets etc should be assessed on priority within definite time framework. The above mentioned coloured varieties are not only attractive but have very good edible quality.

#### **iv) ASEAN countries**

ASEAN countries are imported 64930 tons of Mangoes from world during the year 2010. Major importers were Malaysia (23,521 tons), Singapore (16,027 tons), Vietnam (7212 tons), Indonesia (1103), and Thailand (262 tons). However exports of mango from India to ASEAN countries are only 353.41 tons to Malaysia and 599.27 tons to Singapore and 13 tons to Brunei during 2011-12. This is negligible as compared to what is potential; however, Thailand is able to supply mangoes at much cheaper price to Malaysia and Singapore, the main importers.

Therefore, the strategy for India may be to make available cheaper mangoes like Totapuri (Banglora) in Malaysian market on one hand and campaign for quality and having red blush varieties like Suvarnrekha, Kesar and Alphonso varieties on the other hand for Singapore market. Market for high quality mangoes will have to be nurtured. For competing with Thailand, variety like Totapuri (Banglora) need to be explored and require to be exported from Eastern Port of Andhra Pradesh to save on logistic costs. Side by side India must reduce the cost of production by increasing the productivity. Perhaps with this strategy, we may target a volume of 6000-8000 tons of mango in next 4-5 years.

#### D Measures for enhancing competitiveness for exporting mangoes

Following measures need to be adopted for enhancing competitiveness:

Protocol for CA and MA storage for sea shipping needs to be perfected suiting to all exportable varieties of mango, so that shelf life can be extended and we can compete with Thailand in South East Asia.

Similarly, if sea shipping protocol is perfected, India can stand competitively with Australia, Kenya etc. for exporting to Middle East countries and can effectively enter EU market.

Main emphasis needs to be laid on cost reduction by increasing productivity per hectare which is very low, so that India can compete with Pakistan and other countries which supply mangoes at lower price.

#### 11. Storage

Temperature:	13°C ± 0.5°C
Relative Humidity:.	90 – 95 %.
Storage Period:.	3 - 7 weeks.
Freezing Point:.	-1°C.
Mango has sensitivity to refrigeration, freezing and ethylene exposure.	

#### 12 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

**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.

13 Chain of events which happen up to shipment

**FLOW DIAGRAM OF ESSENTIAL OPERATIONS OF MANGO EXPORTERS/PACKERS**

- Receipt of raw material at Packhouse
- Desapping
- Washing
- Hot water & Fungicide treatment
- Drying
- Sorting & Grading
- Weighment
- Packing & Coding
- Palletization
- Storage (cold stores)
- Container loading
- Transportation