

BOOSTING MANGO EXPORTS WITH GAP ADOPTION: CHALLENGES & PROSPECTS

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ABSTRACT

The purpose of the paper is to examine the current scenario of Indian mango exports and suggest measures to enhance the same by the adoption of Good Agricultural Practices (GAP) standards.

India is the largest mango but the production to export ratio for Indian mangoes is about 0.22, which is comparatively very low Indian mango export destinations are mainly UAE (60%), UK (16%), Saudi Arabia (4%) and Kuwait (3%). Among major constraints for Indian mangoes in international market is lack of adherence to quality standards. According to the report of APEDA (2013-14), Maharashtra contributes the highest exports of mangoes with around 85.7% share of the total Indian mango export; on the contrary, the major producer of mango is Uttar Pradesh which contributes to only 2% share in export. Uttar Pradesh is the major producer of Dashehari variety which is one of the most preferred Indian mango varieties in international market. Growers association (mahamango), online traceability system (mangonet), farmers - co-operative linkages, support from state government are found to be the most favorable factors for boosting exports from Maharashtra. The private certification agency GLOBALGAP existed in India for providing GAP certification to the produce, quite recently INDGAP got established to facilitate the process. Further study proposes that by the adoption of GAP standards the competitive pricing to the farmer gets assured and huge potential exists to export mangoes from India, the need is to strive hard and adopt the internationally recognized quality standards during the production and processing.

KEYWORDS: Mangoes, Export, GAP Certification, Quality Standards, GLOBALGAP, INDGAP

INTRODUCTION

India hosts a rich diversity in mango varieties, each with its unique taste, flavor, texture and the size. Mango, the king of fruits, has a great export potential due to exquisite taste and flavor (**Gopalakrishnan 2013**). India ranks first in area and production of mango with 2.51 million ha and 184.31 lakh tonnes, respectively, accounting to about 46 percent share of world's total production (**NHB database 2015**). Major producing states are Uttar Pradesh, Andhra Pradesh, Karnataka, Bihar, Gujarat and Tamil Nadu. In India, about 1,500 varieties of mango are grown including 1,000 commercial varieties. Each of the main varieties like alphonso, *neelum*, *mallikaarjun* etc. has a unique taste and flavor. Mango varieties having good demand in international market are alphonso, *kesar*, *banganapalli*, *dasher* etc. This remarkably marks great potential for other Indian varieties to explore in the international market. Keeping in view the same, the export figures are not healthy, like we are exporting only 41.2 K tonnes of quantity to major export destinations such as UAE, UK, Saudi Arabia and Kuwait etc. It indicates that production to export share is only 0.22 % (**APEDA, 2015**)

As per studies the major constraints for export are the lack of adoption of quality standards like insect, pest infections as required by importing countries resulting in the ban on Indian export varieties in past. Other major exporting countries like Mexico, Peru and Thailand lead the market with adoption of good agricultural practices (GAP). GAP keeps awareness of the importance of sustainability and its three pillars – social, environmental, and economic – as well as product quality; consumers are now demanding more responsible practices throughout the production chain. In the case of field production, these requirements gave rise to so-called Good Agricultural Practices (GAPs), which can be defined as "doing things in the best way and proving that are the case"(Nature.org 2012).

GAP can be seen as an attempt to improve the sustainability of agriculture which includes protecting environmental and natural resources, improving food quality and food safety, enhancing food security through improved production techniques. A GAP approach to agriculture involves the establishment of guidelines or standards for agricultural producers and post-farm handlers, the monitoring of these standards, and the communication of these standards through credible quality signals to downstream firms, consumers and the public in general(FAO working paper 2007). To attain the goals of sustainable agriculture, protecting environmental and natural resources, improving food safety and security, and enhancing workers' welfare, there is an urgent need to raise awareness among all stakeholders and governments, in particular farmers and consumers, on how GAP can help them improve their profitability and thus quality of life for producers and for the consumers.

In India, exposure of GAP came in year 2003 due to GLOBALGAP (private certification agency of Europe), while successful project implementation by FICCI (Federation of Indian Chambers of Commerce & Industry) in year 2008 focusing horticulture produce along with alphonso, kesar mango varieties and with recent implementation of INDGAP is also leading the road towards the growth of export market. Hence study lies towards understanding present scenario of export market and perspectives of mango export with the adoption of GAP practices along with the challenges to this industry.

OBJECTIVES

Present study deals with following objectives:

- To study present scenario of Indian mango production and export industry
- To study scenario of GAP implementation
- To study challenges and perspectives of mango export industry

DATA METHODS

Secondary data from various sources like, web portals of government official such as National Horticulture Board, Agricultural and Processed Food Products Export Development Authority, research papers, project reports, magazines etc. have been taken and analyzed. While, primary data have gathered from mango growers at Lucknow (Uttar Pradesh), experts (Government officials, Exporters) meeting at Mumbai (Maharashtra).

- Sampling: Convenient sampling
- Sample size: 15 mango growers

Mostly results have been stated as per delivery by secondary data, also findings have been backed with the opinions of growers although small in number. But to understand ground reality related to abiding of quality norms by growers, concerned feedback has been taken.

RESULTS & DISCUSSIONS

Objective 1: To Study Present Status of Production Trend and Mango Export Industry

India ranks among top 5 countries in the export of mangos. Major players in mango export are Mexico, Netherland and Thailand as per latest data for 2014. Mexico with famous *kent* variety and target market of world's biggest importers for fresh mangoes i.e. USA is doing well at present and holds top position. Thailand has appeared to top in recent years and has its export market in China; about 90% of the mango from Thailand is exported to China.

Table 1: Top Mango Exporters 2014

Country	%Age Share Of Export
Mexico	13.5
Netherland	12.2
Thailand	9.6
India	9.4
Brazil	7.9
Peru	6.6
Philippines	6.2
Spain	3.7
Pakistan	2

Source: Trade Map, ITC (2015)

As per the latest report by ASSOCHAM (Associated Chambers of Commerce of India) (2015), there is fall of about 26% in the export quantity of mangoes. As per data it is observed that total quantity exported in year 2012-13 is 55,585 tonnes but figures reduced to 41,280 tonnes in the year 2013-14. Hence there is decrease in the quantity and also growth in realization has fallen from 26% in 2012-13 to 8% in 2013-14.

For the year 2013, 2014 data for fresh mango production shows that although there is slight increase in the volume but not upto large extent. Table 2 shows state wise production along with productivity figures for fresh mangos during year 2013, 2014.

Table 2: State Wise Area, Production and Productivity of Mango

State	2013-14			2012-13		
	Area (/’000 Hectare)	Production (/’000 MT)	Productivity (MT/Hectare)	Area (/’000 Hectare)	Production (/’000 MT)	Productivity (MT/Hectare)
Uttar Pradesh	262.16	4300.98	16.4	274.03	4386.99	16
Andhra Pradesh	304.11	2737.01	9	489.66	4406.92	9
Karnataka	180.53	1755.56	9.7	178.8	1795.1	10
Telangana	190.88	1717.88	9	-	-	-
Bihar	149	1367.57	9.2	147.74	1363.8	9.2
Maharashtra	485	1212.5	2.5	482	633	1.3
Gujarat	142.69	1125.61	7.9	141.26	1003.71	7.1
Tamilnadu	161.58	785.5	4.9	152.43	714.08	4.7
Odisha	197.52	751.02	4.9	197.46	753.79	3.8
Jharkhand	51.33	517.92	10.1	51.33	517.92	10.1
Kerala	74.44	441.03	5.9	74.44	441.03	5.9
West Bengal	93.5	430.71	4.6	92.5	735	7.9

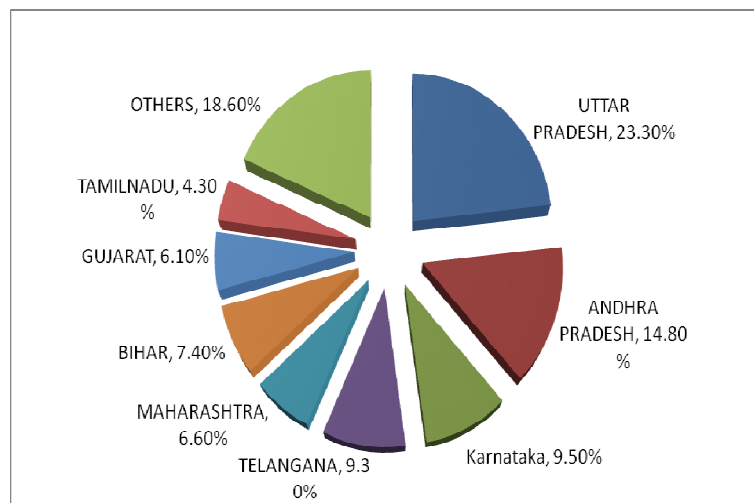
Others	223.23	1288.04	5.8	218.37	1251.03	5.7
Total	2515.97	18431.33	7.3	2500	18002.4	7.2

Source: NHB Database 2015

It can be observed from the table, with high productivity figures and volume of production Uttar Pradesh ranks first among all the states. Due to recent splitting of Andhra and Telangana, Andhra moves to 2nd place. Jharkhand is also showing good productivity, while Maharashtra has very low productivity among all states. Although Maharashtra shows production figures almost double than the last year which is a good sign.

Share wise production by major states has been analyzed and is represented by the graph as shown below.

Chart 1: Major Mango Producing States 2013-14



Source: NHB Database 2015

Country Wise Export of Fresh Mango

UAE is the biggest export destination for fresh mangoes, while other countries have a very small share in comparison to UAE. UK is 2nd most important export destination with share of about 71%. Saudi Arabia and Kuwait are other important export destinations. Export to UK market has been affected due to the posing of ban because of fruit fly contamination on May 2014. UK is having share of about 2% in total export market of India.

Looking for the last 3 year export data, it is found that in country like Qatar percentage increase from the last year has been about 115%, although figures for Bhutan is about 500% but the trade quantity is very low. It can also be observed that these destinies are not so strict for quality parameters although growth to these places is positive trend. Removal of ban from Japan and implementation of vapor heat treatment facility at Saharanpur UP has opened up export market in Japan which is a very good sign. This treatment is given for affected mangoes with fruit fly contamination. Here, mangoes get treated in the chamber at 48.5⁰C for about 20 minutes. Maharashtra government has also implemented the same facility which is having comparatively high capacity. This facility is also supplement to hot water treatment as if particular mango variety is not susceptible to hot water treatment which is at 50⁰c for about 60 minutes. Due to reason, some of the exporters have reported that Alphonsho did not show positive results after treatment and it causes wrinkles. So government has provided another alternative.

Table3: Last 3 Year Mango Export from India (Country Wise) Value in `Cr.

Country	2012-13		2013-14		2014-15		%Age Growth On	%Age Share
	Qty	Value	Qty	Value	Qty	Value	Previous Year	In 2014-15
United Arab Emirates	37,598.64	162.87	23,046.65	172.31	29,231.90	214.98	24.76	71.06
Saudi Arabia	1,665.43	12	1,721.91	12.19	2,171.49	14.29	17.23	4.72
Kuwait	828.16	8.4	4,601.44	8.24	787.28	12.38	50.24	4.09
Qatar	1,522.89	8.87	770.08	6.55	998.1	8.11	23.82	2.68
Nepal	2,237.62	6.1	1,106.44	3.23	3,574.93	6.95	115.17	2.3
United States	242.2	5.78	242.42	5.62	271.79	6.88	22.42	2.27
United Kingdom	3,304.48	32.5	3,381.08	45.45	329.8	6.06	-86.67	2
Singapore	650.27	4.2	545.94	5.04	562.95	5.88	16.67	1.94
Bahrain	497.49	2.61	634.54	4.04	658.71	5.05	25	1.67
Bangladesh	4,650.21	7.76	2,899.85	4.11	2,475.33	4.73	15.09	1.56
Oman	353.45	3	345.3	3.23	605.2	4.69	45.2	1.55
Canada	437.88	2.01	459.49	2.74	669.26	4.3	56.93	1.42
Malaysia	223.35	1.26	226.14	1.96	202.31	2.88	46.94	0.95
Hong Kong	193.9	1.17	163.88	1.28	193.07	1.87	46.09	0.62
New Zealand	14.17	0.26	40.83	0.85	50.25	1.03	21.18	0.34
Switzerland	175.29	1.53	140.42	1.58	21.91	0.45	-71.52	0.15
Netherland	178.26	0.74	183.62	1.5	37.67	0.37	-75.33	0.12
Maldives	29.14	0.07	16.9	0.16	34.57	0.32	100	0.11
Australia	1.57	0.03	14.95	0.18	18.76	0.24	33.33	0.08
Brunei	16.71	0.17	10.41	0.13	16.59	0.2	53.85	0.07
Bhutan	72.81	0.17	41	0.03	29	0.19	533.33	0.06
Japan	0	0	0.02	0	4.85	0.16	100	0.05

Source: APEDA, 2015

India has good production of fresh mangoes, world leader in terms of production figures, but as after analyzing the production ratio with respect to export for last 6 years, situation is not very healthy. Data for the same is presented below in Table no. 4. It is found that share of production to export is very low and also has a downward trend as compared to last year. Presently the production to export ratio is only about 0.22% which is not very impressive. As per studies it is found that major export countries such as Mexico, Peru have production to export ratio between 45-55%. Hence there is big scope for India to increase its export share.

Table 4: India's Production to Export Data

Year	Total Production ('000 Tones)	Total Export (Mt)	Export ('000 Mt)	% Share of Export Volume to Production
2008-09	12,749.77	83686.00	83.686	0.66
2009-10	15,026.80	74,456.50	74.4565	0.50
2010-11	15,188.38	58,856.39	58.85639	0.39
2011-12	16,196.38	63,439.95	63.43995	0.39
2012-13	18,002.37	55,584.15	55.58415	0.31
2013-14	18,431.33	41,272.17	41.27217	0.22

Source: APEDA, 2015

Objective 2: Status of GAP in India

Private certification agency GLOBALGAP exists in India to provide GAP certification to the produce since 2003; quite recently INDGAP got established to facilitate the process. With the aim of providing safe and quality produce national GAP program was implemented in September 2014. It has provision for both domestic as well as international market under its specified modules for both types of market.

As per the data available upto 2008, number of GAP certified producers is presented under table no.5 shown below. Results are indicating that there is fluctuation in the number of certified growers under both categories i.e. individual grower and farmer group. Under the individual grower category, highest number observed in year 2006. However in year 2008 there is a slight decrease in number.

Table 5: Global gap Certification in India

Year	Number of Growers Under Option -1 (Individual Grower)	Number of Growers Under Option -2 (Farmer Group)
2003	12	Nil
2004	48	4(46)
2005	139	11(440)
2006	243	6(357)
2007	224	10(475)
2008	195	16(1214)

Source: QCI archives, 2011

Case Study for Successful GAP Implementation in India

FICCI-NOARD national project 2007-10 resulted in introduction of better standards in agricultural practices in line with international standards and financial benefits to farmers through increased exports of fruits and vegetables.

The project achieved notable success in creating awareness of these standards in several states of the country. Maharashtra came into greater focus due to the production of grapes and mangoes, the two major fruits with high export potential. The project resulted in certification of 210 farms which included *alphonso* and *kesar* mango growers. It has been recorded by Agricultural and Processed Food Products Export Development Authority (APEDA) that EUREPGAP certified grapes boosted India's exports to Europe and *alphonso* and *kesar* mangoes were exported for the first time in the history of the country.

Advantages and Benefits of GLOBALGAP Implementation

GLOBALGAP is an internationally recognized set of farm standards dedicated to Good Agricultural Practices. Through certification producers demonstrate their adherence to GLOBALGAP standards. These standards are specific to European standards while applicable throughout the world. Various advantages and benefits associated with implementation of these standards are as:

- Increased consciousness of safety of the raw agricultural produce has been inculcated
- Controlled use of pesticides and fertilizers in the field has been established to conform to the absence of any residues or their being well within tolerance limits
- Introduction of better standards in agriculture practices in line with international standards such as product attributes, insect, pest free, maintaining minimum residue level
- Increased confidence among European importers about quality and safety of fruits from India and availability of safe produce for domestic customers
- Financial benefits to farmers through increased exports of fruits and vegetables and better price realization from exporters and domestic retail chains

Although GAP implementation has major challenges like, record keeping, affordability, mind sets etc. but still there is a bright future for these standards to spread all over the country. Other important and internationally demanded varieties of mangoes like *dasherican* also explored to global markets with focus on capacity building and projects.

Objective 3: Challenges and Prospects for Mango Export Industry

Challenges

As per pilot survey held at Lucknow, interaction with various growers has been made and no grower has association with export market. Various factors have been categorized and shown as below representing the challenges faced by growers for low export from this part of country.

As Per Grower's Opinion for Low Export of Mangoes from North specially are

- Lack of awareness/ benefits of export
- Very difficult to maintain quality/ Phytosanitary standards
- Lack of knowledge for implementation/ process initiation for good Agricultural Practices
- Bad past experiences
- Satisfied with current market channel, price at local market
- Production at low volume so do not target exports

Expert's View for Constraints to Export from North

- No shipping way through sea route, while air route is not abundant for large quantities and at cheaper costs. Like major constraint to US market is that it is very far and with air charges, freight costs product become very

expensive in lights of margin taken by middlemen in markets of both nations.

- There is more emphasis on contract farming of mangoes along with other crops in Uttar Pradesh, due to which farmers are only selling produce to whom they have made the contract. They are not aware of suitable market, further need of quality products and demand of their produce in overseas markets.
- Capacity building training programs is not as requisite to aware farmers, to boost farmers towards quality standards and creating lights among them towards focus on quality standards.
- Malpractices by traders like keeping price fixed, as farmers do not have proper storage facilities hence they easily compensate with traders
- Other factors are lack of quality, low grower linkages, society formation and low branding for even highly demanded and famous varieties at international level.

Prospects

Among all states, Maharashtra is a leader for export of fresh mangoes, having large share about 85%, while biggest producing state i.e. Uttar Pradesh has very low export figures. Other major export areas are Andhra Pradesh, Kerala and Gujarat. Data has been presented as below:

Table 6: State Wise Mango Export

State	Year 2012-13		Year 2013-14		% Share 2012-13	% Share 2013-14
	Qty MT	` Cr.	Qty MT	` Cr.		
Maharashtra	44175.69	222.05	33167.64	244.68	83.89	85.73
Andra Pradesh	582.88	5.16	889.27	7.1	1.95	2.49
Karnataka	13.45	0.14	29.52	0.35	0.05	0.12
Tamilnadu	650.32	3.05	483.67	3.71	1.15	1.30
Kerala	2810.85	16.49	1755.94	14.18	6.23	4.97
Uttar Pradesh	1484.77	4.17	415.66	1.97	1.58	0.69
Gujarat	322.63	3.31	584.43	5.79	1.25	2.03
Others	5,534.61	10.32	3,941.17	7.63	3.90	2.67
Total (India)	55,575.20	264.69	41,267.30	285.41		

Source: APEDA, 2015

Table 7: Country wise export from Maharashtra

Country	2012-13		2013-14	
	Qty	Value ` Cr.	Qty	Value ` Cr.
United Arab Emirates	36710.56	157.03	22546.26	167.87
Kuwait	717.89	7.74	446.71	7.19
United States	221.89	5.7	131.35	5.42
United Kingdom	3035.27	29.72	2947.41	40.09
Saudi Arabia	1027.76	7.22	651.44	4.78
Qatar	226.01	1.05	183.7	1.03

Source: APEDA, 2015

Case of Maharashtra state, cooperative formation, provision for tracibility resulting in higher number of export figures which can be replicated for other areas as well. This will be ultimately leading India to explore various export

market and designing brand 'India' at international level.

For export of mangoes, facilities like pre-cooling, cold-storage, pack house, grading packing line etc. are available at the facility centre of Mahamango, which is a co-operative partnership society established on 8th March, 1991.

Studies have shown that growers association (Mahamango), online traceability system (Mangonet), farmer- co-operative linkages, support from state government are found to be most favorable factors for boosting export from Maharashtra. Higher number of GAP certified producers belong to Maharashtra state. As per data available on Maharashtra State agriculture board, total number of GLOBALGAP certified growers in Maharashtra are about 118 as per information retrieved up to June 2015.

Therefore case of Maharashtra makes a good scope for other parts of the country to lead their way towards export.

SUGGESTIONS/CONCLUSIONS

- This study seeks to examine the effect of compliance with Global GAP standards and its implications for access to export market and incomes for smallholder mango producers
- With about 1500 varieties, including 1000 commercial with unique taste and flavor, India ranks high among mango producing countries.
- As found out, productions to export a ratio figure are very low and provides great scope of concern for boosting export.
- Rejection of Indian mango by developed countries like US, Japan, Europe indicates there is severe need to adopt quality standards.
- The adoption of Good Agriculture Practices (GAP) by the farmers to make the produce internationally marketable favors the environment and assures food quality and safety.
- Maharashtra has highest number of export figures among all other states due to various supporting factors like growers association (Mahamango), online traceability system (Mangonet), farmer- co-operative linkages, support from state government, also state having highest number of GLOBALGAP certified producers. Hence Maharashtra model can be a strong base for other major production areas for mangoes to increase export quantity.
- In order to have suggestive approaches for the promotion of export from the country, there is a need from government, private (exporters, associations) to support producers, formulate channel for successful implementation of GAP, to focus at international level, recent start up of national GAP on November 2014.

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