European Journal of Agricultural and Rural Education (EJARE)
Available Online at: https://www.scholarzest.com
Vol. 2 No. 1, January 2020,
ISSN: 2660-5643

AN EMPIRICAL ANALYSIS OF PRODUCTION AND EXPORT OF MANGOES FROM INDIA

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Article history:

Received December 26th 2020
Accepted: January 11th 2021
Published: January 26th 2021

Abstract:

India is the second largest producer of fruits in the world after China followed by Brazil. A large variety of fruits are grown in India. Mango is most widely grown fruit crop in India with a share of 34.71 percent in area and 22.41 percent share in production. An attempt has been made in this paper to analyse the production and export of mangoes from India. It has been found from the study that India holds the first rank in area and production of mangoes in the world with 41.25 percent share in global area under mango cultivation and 40.38 percent share in global production of mangoes. The area, production and productivity of mango in India displayed compound annual growth rate of 4.45 percent, 5.55 percent and 1.05 percent between 20001-02 and 2017-18respectfully. Furthermore, it is found from the study that total quantity of mango exported displayed negative compound annual growth rate of 2.42 percent while as total value of mango exported recorded remarkable compound annual growth rate of 7.63 percent between 2012-13 and 2017-18. The major export market for Indian mangoes is U.A.E with percentage share of 58.71 to total export value followed by U.K. (9.45 percent) and Saudi Arabia (5.09 percent).

Keywords: Area, Export, Fruits, Mango, Production, Quantity, Value and Yield

1.INTRODUCTION

The horticulture sector encompasses a wide variety of crops e.g., fruit crops, vegetables crops including potato and tuber crops, ornamental crops, medicinal and aromatic crops, spices, condiments and plantation crops is presently perhaps the most beneficial venture for all farming activities (Bahadur, 2010)[1]. Indeed, the varied eco-climatic conditions prevailing in different parts of the country make it feasible to cultivate almost all varieties of horticulture crops in particular and other crops in general, thus making India unique in its diversity of crops (Dhamotharan, 2014)[2]. India is the second largest producer of vegetables and fruits in the world now next only to China. India leads the world in the production of banana, mango, guava, lemons and lime, papaya and okra (Govt. of India, 2017)[3]. India is the second largest producer of fruits in the world after China followed by Brazil. A large variety of fruits are grown in India. Among the tropical fruits; mango, banana, citrus, pineapple, sapota, litchi, papaya, grape, and guava, among the sub-tropical fruits; apple, peach, plum, pear, walnut and almond and among the arid zone fruits; anola, ber, pomegranate, annoma, and phalsa are the important ones. India accounts for 10 percent of the total fruit production in the world (Patil and Niban, 2017)[4].

The area under fruits in India has increased from 2874 thousand hectares in the year 1991-92 to 6506 thousand hectares in the year 2017-18. The production increased from 28632 thousand metric tonnes in 1991-92 to 97358 metric tonnes in the year 2017-18 and the productivity increased from 9.96 metric tonnes / hectare in 1991-92 to 14.96 metric tonnes/hectare during the year 2017-18, displayed compound annual growth rate of 3.07 percent, 4.64 percent and 1.52 percent in area, production and productivity respectively. Over the past 28 years, the area under fruits grew by 4.51 percent per annum and annual production by 8.57 percent. Fruits in India account for nearly 25.58 percent of total horticulture area but their contribution to total horticulture production is 31.23 percent (Govt. of India, 2018)[5].

Mango is most widely grown fruit crop in India with a share of 34.71 percent in area and 22.41 percent share in production. Guava occupies the second position amongst the fruit crops with a share of 4.07 percent in area and 4.16 percent share in production followed by Pomegranate with 3.60 percent and in area and 2.92 percent share in area and production respectfully (Govt. of India, 2018)[6]. Mango is of great economic value and has served as a means of revenue for farmers in India and it has high demand in the global market (Kusuma and Basavaraja, 2014)[7].

Globalization, trade liberalization and changes in consumer demand are creating new market opportunities for farmers especially through horticultural systems in the tropics and subtropics. A strong horticulture sector is an engine for economic growth: it creates jobs, supports agri-businesses, and generates income to a greater degree than staple

crops. The mission of the Global Horticulture Initiative is to improve the health and income of the poor in developing countries through sustainable, demand driven, horticultural production, processing and marketing systems. The trade in horticultural goods can play a significant role in promoting economic development, especially in developing countries like India, where the majority of the population is engaged in agriculture, whereas, horticulture is an integral part of it. Many less developed countries have greater comparative advantage as they are capable of producing these goods with competitive export prices and these goods would form the main source of their exchange earnings (Mali & Ramanjaneyulu, 2016)[8].

2.OBJECTIVES OF THE STUDY

- To analyse the growth performance of area, production and productivity of mangoes in India.
- To examine the total exports of fresh mango fruit from India in terms of quantity and value.
- To find out the major export market for Indian mangoes.

3.METHODOLOGY

The present study is based on secondary data. The secondary data have been collected from various official sources like Ministry of Agriculture, Horticulture Statistics Division, Department of Agriculture, Cooperation and Farmers Welfare (Government of India), Central Statistics Office, Ministry of Statistics and Programme Implementation (Government of India), Ministry of Finance, Department of Economic Affairs, Economic Division (Government of India), Further various published research papers, books, periodicals, reports, magazines, newspapers, and websites have also been used for the study.

4.STATISTICAL ANALYSIS

The statistical techniques used in this study are Average, Percentage, Annual Growth Rate, Compound Annual Growth Rate and Correlation.

a. Average

$$\mathbf{A = } \frac{1}{n} \times \sum_{i=0}^{n} x_i$$

Where, A = average
n = the number of terms
X_i = value of each individual item in the list of numbers being averaged

b. Annual Growth Rate:

The annual growth rates for a series of T annual observations, say $y1$, $y2$, $y3 \ldots . yt$ is defined as:

$$\textbf{Annual Growth Rate} = \frac{Y_t - Y_{t-1}}{Y_{t-1}} \times 100$$

Whereas, y_t refers current year out-put
Y_{t-1} refers previous year out-put

c. Compound Annual Growth Rate (CAGR)

The compound annual growth rate is a simple measure to find out the year-wise increase and decrease in the variables under study. The compound annual growth rate is a number that represents a steady level of growth from the initial value to an ending value as it determines the average of year to year growth rate for time series data. It is expressed in the following form.

$$\textbf{CAGR} = \left(\frac{Y_t}{Y_{t-1}}\right)^{\frac{1}{N}} - 1 \times 100$$

Where, Y_t = Value of Current year
Y_{t-1} = Value of Base year
N = Number of Years

d. Correlation:

Karl Pearson's coefficient of formula has been used to calculate coefficient of correlation which is given below:

$$r = \frac{\sum XY}{\sqrt{\sum X^2 \sum Y^2}}$$

Whereas;

r = Karl Person`s Coefficient of Correlation

$\mathbf{x = (x - \bar{x})}$ **and** $\mathbf{y = (y - \bar{y})}$

5.DATA ANALYSIS AND INTERPRETATION

Table 1.1: Major Mango producing Countries in the World – 2016

(Area in Million Hectares, Production in Million Tonnes and Productivity in Tonnes / Hectare)

Country	Area	Production	Yield
India	**2.24 (41.25)**	**18.78 (40.38)**	**8.39**
China	0.59 (10.87)	4.77 (10.26)	8.14
Thailand	0.41 (7.55)	3.43 (7.37)	8.36
Mexico	0.21 (3.87)	2.20 (4.73)	10.64
Indonesia	0.17 (3.13)	2.18 (4.69)	13.02
Pakistan	0.17 (3.13)	1.61 (3.46)	9.57
Brazil	0.08 (1.47)	1.42 (3.05)	17.95
Egypt	0.11 (2.03)	1.28 (2.75)	11.30
Bangladesh	0.15 (2.76)	1.16 (2.49)	7.59
Nigeria	0.13 (2.39)	0.92 (1.98)	6.87
Others	1.17 (21.55)	8.87 (19.07)	7.58
World	**5.43 (100)**	**46.51 (100)**	**8.57**

Source: FAOSTAT Website (http://faostat3.fao.org/home/E) accessed on 4th June, 2018

(Figures in Parenthesis indicate percentage to total)

An illustration of area, production and productivity of major mango producing countries in the world during the year 2016 is presented in table 1.1. It is obvious from the table that the total area in the world under mango cultivation is 5.43 million hectares with 46.51 million tones production and the global productivity of mangoes is 8.57 tonnes / hectare. The table further depicts that the area under mango cultivation in India is 2.24 million hectares with 18.78 million tons production and holds the first rank in area and production of mangoes in the world with 41.25 percent share in global area under mango cultivation and 40.38 percent share in global production of mangoes. China holds the second rank in area and production of mangoes in the world with 10.87 percent share in area and 10.26 percent share in production followed by Thailand with 7.55 percent share in area and 7.37 percent share in production, Mexico with 3.87 percent share in area and 4.73 percent share in production, Indonesia with 3.13 percent share in area and 4.69 percent share in production and Pakistan with 3.13 percent share in area and 3.46 percent share in production.

Furthermore, it is evident from the table that Brazil holds the first rank in the productivity of mangoes in the world with 17.95 tonnes / hectare followed by Indonesia with 13.02 tonnes / hectare, Egypt with 11.30 tonnes / hectare, Mexico 10.64 tonnes / hectare and Pakistan with 9.57 tonnnes / hectare. The productivity of mangoes in these countries is higher than the global productivity of 8.57 tonnes / hectare. The productivity is lowest in Nigeria with 6.87 tonnes / hectare. It is also low in Bangladesh (7.59 tonnes / hectare), China (8.14 tonnes / hectare), Thailand (8.36 tonnes / hectare) and India (8.39 tonnes / hectare). The productivity of mangoes in these countries is lower than the global productivity.

Hence, it is inferred from the analysis table that though we are the leading producers of mangoes in world with 41.25 percent share in global area under mango cultivation and 40.38 percent share in global production of mangoes. But we are far behind in case of productivity from most of the mango producing countries even our productivity is lower than Pakistan and global productivity. If India has to enhance the reputation at global level in terms of production of mangoes, there is urgent need to increase the productivity of mangoes.

Table 1.2: All India Area, Production and Productivity of Mangoes – 2001-02 to 2017-18

(Area in Million Hectares, Production in Million Tonnes, Productivity in Tonnes / Hectare)

Year	Area	AGR*	Production	AGR	Yield	AGR
2001-02	1.08	-	8.72	-	8.09	-

2002-03	1.58	46.23	10.02	14.97	6.36	-21.38
2003-04	1.62	3.02	12.73	27.08	7.84	23.35
2004-05	1.91	17.45	11.49	-9.76	6.03	-23.17
2005-06	1.97	3.34	11.83	2.96	6.00	-0.37
2006-07	2.08	5.60	12.66	7.04	6.09	1.37
2007-08	2.15	3.52	13.73	8.46	6.38	4.77
2008-09	2.31	7.20	12.75	-7.16	5.52	-13.40
2009-10	2.31	0.14	15.03	17.86	6.50	17.69
2010-11	2.30	-0.66	15.19	1.07	6.61	1.75
2011-12	2.38	3.53	16.20	6.64	6.81	3.00
2012-13	2.50	5.13	18.00	11.15	7.20	5.73
2013-14	2.52	0.64	18.43	2.38	7.33	1.73
2014-15	2.16	-14.01	18.53	0.52	8.56	16.90
2015-16	2.21	2.08	18.64	0.62	8.44	-1.43
2016-17	2.21	0.16	19.51	4.63	8.82	4.46
2017-18	2.26	2.07	21.82	11.87	9.66	9.60
Average	2.09	5.34	15.02	6.27	7.19	1.91
Growth	109.55		150.38		19.49	
CAGR	4.45		5.55		1.05	

Source: Horticultural Statistics at a Glance 2018, p. 146
*AGR = Annual Growth Rate

The area, production and productivity of mangoes in India from 2001-02 to 2017-18 is presented in table 1.2. It is apparent from the table that the area under mango cultivation increased from 1.08 million hectares in 2001-02 to 2.26 million hectares in 2017-18 with average area of 2.09 million hectares. The area under its cultivation displayed remarkable growth of 109.55 percent and compound annual growth rate of 4.45 percent over the study period of 18 years. The highest annual growth rate of 46.23 percent in its area is pronounced in the year 2002-03 whereas it was lowest (-14.01 percent) during the year 2014-15 with average annual growth rate of 5.34 percent between 2001-02 and 2017-18.

The table further depicts that the production of mangoes has increased from 8.72 million tonnes in 2001-02 to 21.82 million tonnes in 2017-18 with average production of 15.01 million tonnes. The production of mangoes displayed remarkable growth of 150.38 percent and compound annual growth rate of 5.55 percent over the study period of 18 years. The highest annual growth rate of 27.08 percent in production of mangoes is found in the year 2003-04 whereas it was lowest (-9.76 percent) during the year 2004-05 with average annual growth rate of 6.27 percent over the past 18 years i.e. between 2001-02 and 2017-18.

Furthermore, it is evident from the table that the productivity of mangoes in India increased from 8.09 tonnes / hectare in 2001-02 to 9.66 tonnes / hectare in 2017-18 with average productivity of 7.19 tonnes / hectare. The productivity of mangoes displayed marginal growth of 19.49 percent and compound annual growth rate of 1.05 percent over the study period of 18 years. The highest annual growth rate of 23.35 percent in its productivity is pronounced in the year 2003-04 whereas it was lowest (-23.17 percent) during the year 2004-05 with average annual growth rate of 1.91 percent between 2001-02 and 2017-18.

Table 1.3: Export of Mangoes (Fresh/Dried) from India in terms of Quantity - Country-wise (Quantity in 000, Metric Tonnes)

Country	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average	CAGR*
U.A.E	37.60	23.05	29.23	19.97	28.48	23.54	26.98 (58.11)	-8.94
U.K.	4.65	3.38	0.33	1.50	3.03	3.73	2.77 (5.97)	-4.31
Saudi Arabia	1.67	1.72	2.17	1.40	2.37	2.67	2.00 (4.31)	9.84
Qatar	1.52	0.77	1.00	1.02	2.25	2.32	1.48 (3.19)	8.83
Kuwait	0.83	4.60	0.79	0.75	1.10	1.30	1.56 (3.36)	9.39
Nepal	2.24	1.11	3.57	8.70	9.42	7.88	5.49 (11.82)	28.60
Others	7.08	6.65	5.90	3.44	6.11	7.74	6.15 (13.25)	1.80
Total	**55.58**	**41.28**	**43.00**	**36.78**	**52.76**	**49.18**	**46.43 (100)**	-2.42

Source: APEDA website accessed on 11.9.2018
Figures in parenthesis indicate percentage to total
*CAGR: Compound Annual Growth Rate

The export of mangoes from India to different destinations from 2012-13 to 2017-18 is presented in table 1.3. It is apparent from the table that total quantity of mango export decreased from 55.58 thousand metric tonnes in 2012-13 to 49.18 thousand metric tonnes during the year 2017-18 and displayed negative compound annual growth rate of 2.42 percent. The table further depicts that the quantity of mango exported to U.A.E and U.K. also decreased from 37.60 and 4.65 thousand metric tonnes in the year 2012-13 to 23.54 and 3.73 thousand metric tonnes during the year 2017-18 and displayed negative compound annual growth rate of 8.94 and 4.31 percent respectfully. But during the same study period of 6 years i.e. between 2012-13 and 2017-18, the quantity of mango exported to Saudi Arabia, Qatar, Kuwait, Nepal and other countries has increased and pronounced compound annual growth rate of 9.84 percent, 8.83 percent, 9.39 percent, 28.60 percent and 1.80 percent respectfully.

Analysing the average of mango exported to different countries during the study period, it becomes clear that the major export market for Indian mangoes is U.A.E with percentage share of 58.11 to total exports followed by Nepal (11.82 percent), U.K. (5.97 percent), Saudi Arabia (4.31 percent), Kuwait (3.36 percent) and Qatar (3.19 percent).

Table 1.4: Export of Mangoes (Fresh/Dried) from India in terms of Value - Country-wise (Value in ☐ Crores)

Country	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average	CAGR
U.A.E	162.87	172.31	214.98	191.99	247.45	184.58	195.70 (58.73)	2.53
U.K.	7.76	45.45	6.06	32.06	49.57	47.98	31.48 (9.45)	43.96
Saudi Arabia	12.00	12.19	14.29	16.75	24.46	21.99	16.95 (5.09)	12.88
Qatar	8.87	6.55	8.11	10.23	21.47	19.81	12.51 (3.75)	17.43
Kuwait	8.40	8.24	12.38	12.98	19.11	16.31	12.90 (3.87)	14.19
Nepal	6.10	3.23	6.95	17.33	16.04	15.12	10.80 (3.24)	19.91
Others	58.72	37.46	39.76	39.29	65.57	76.54	52.89 (15.87)	5.44
Total	**264.72**	**285.43**	**302.54**	**320.64**	**443.66**	**382.34**	**333.22 (100)**	7.63

Source: APEDA website accessed on 11.9.2018
Figures in parenthesis indicate percentage to total
*CAGR: Compound Annual Growth Rate

The export of mangoes in terms of value from India to different destinations from 2012-13 to 2017-18 is illustrated in table 1.4. It is apparent from the table that total value of mango export increased from ☐ 264.72 crore in 2012-13 to ☐ 382.34 crore during the year 2017-18 and recorded remarkable compound annual growth rate of 7.63 percent. The table further depicts that the value of mango exported to different markets also increased during the same study period. The highest increase in value of mango export during the study period is witnessed by U.K., as it is evident from the obtained results that the value of mango exported to U.K. increased from ☐ 7.76 crore in 2012-13 to ☐ 47.98 crore during 2017-18 and recorded outstanding compound annual growth rate of 43.96 percent. Nepal holds the second rank in terms of increase in value of mango exported from India and witnessed compound annual growth rate of 19.91 percent followed by Qatar (17.43 percent), Kuwait (14.19 percent), Saudi Arabia (12.88 percent). The lowest increase in value of mango exported from India is witnessed by U.A.E, as it is evident from the analysis table that the value of mango exported to U.A.E. increased marginally from ☐ 162.87 crore in 2012-13 to ☐ 184.58 crore during 2017-18 and displayed lowest compound annual growth rate of 2.53 percent.

Analysing the average of value of mango exported to different countries during the study period, it is clearly found that that the major export market for Indian mangoes is U.A.E with percentage share of 58.71 to total export value followed by U.K. (9.45 percent), Saudi Arabia (5.09 percent), Kuwait (3.87 percent) Qatar (3.75 percent) and Nepal (3.24 percent).

Table 1.5: Correlation Matrix of Various Components of Mango Export

	Export Quantity	Export Value	Area	Production	Yield	Rainfall	Irrigated Area	Fertilizer Consumption
Export Quantity	1							
Export Value	0.279 (.593)	1						
Area	0.238 (.650)	-0.576 (.232)	1					
Production	0.195 (.712)	0.658 (.155)	- 0.358 (.486)	1				
Yield	-0.008 (.988)	0.752 (.085)	-0.794 (.060)	0.852 (.031)	1			
Rainfall	-0.287 (.582)	-0.469 (.349)	-0.296 (.570)	-0.171 (.746)	0.055 (.918)	1		
Irrigated Area	0.114 (.830)	0.572 (.235)	-0.390 (.445)	0.850 (.032)	0.773 (.031)	0.149 (.778)	1	
Fertilizer Consumption	0.793 (.050)	0.084 (.875)	0.489 (.325)	-0.054 (.918)	-0.312 (.548)	-0.634 (.176)	-0.365 (.476)	1

Source: Computed by Researcher from Various Issues of Horticultural Statistics at a Glance

The correlation matrix of various components of mango export is presented in table 1.5. It is apparent from the table that there is positive correlation between export quantity and export value, export quantity and area, export quantity and production, export quantity and irrigated area but their strength of correlation is weak, which implies that export quantity does not increase in line with increase in these components. There is positive correlation between export quantity and fertilizer consumption and the strength of correlation is high, indicates export quantity increases with increase in fertilizer consumption. There is negative correlation between export quantity and Yield and between export quantity and rainfall which implies that with the increase in yield and rainfall, export quantity decreases.

The table further depicts that that there is positive correlation between export value and yield and their strength of correlation is high, which implies that export value increases with increase in yield of mangoes. There is positive correlation between export value and production, export value and irrigated area and their strength of correlation is moderate indicating that the export value increases with increase in production of mangoes and irrigated area under mango cultivation but the increase is not as high as compared to increase in yield. The table further

depicts that there is positive correlation between export value and fertilizer consumption but their strength of correlation is low indicating that the export value increases with increase in fertilizer consumption but the two variables are hardly associated with each other. Furthermore, the table depicts that there is negative correlation between export value and area and between export value and rainfall and their strength of correlation is moderate, which implies that export value decreases with increase in area under mango cultivation and rainfall.

It is apparent from the analysis table that there is positive correlation between area under mango cultivation and fertilizer consumption and their strength of correlation is moderate, which implies that with the increase in area under mango cultivation, fertilizer consumption also increases significantly. There is negative correlation between area under mango cultivation and its production, between area and yield, area and rainfall and between area under mango cultivation and irrigated area and their strength of correlation is moderate which implies that with the increase in area under mango cultivation, its production, yield, rainfall and irrigated area decreases.

The table further depicts that there is positive correlation between mango production and its yield and between mango production and irrigated area and their strength of correlation is high, which implies that production increases significantly with increase in its yield and irrigated area. But there is negative correlation between mango production and rainfall and between mango production and fertilizer consumption and their strength of correlation is low, which implies that with the increase in rainfall and fertilizer consumption, production of mangoes decreases.

Furthermore, it is apparent from the obtained results that there is positive correlation between yield of mangoes and rainfall and their strength of correlation is low, which implies that yield increases with increase in rainfall but the increase is very low. But there is positive correlation between yield of mangoes and irrigated area and their strength of correlation is high, which implies that yield increases with increase in irrigated area and increases significantly. There is negative correlation between mango yield and fertilizer consumption and their strength of correlation is moderate, which implies that with the increase in fertilizer consumption, yield of mangoes decreases.

6.POSSIBLE CAUSATION FOR REVERSIBLE CORRELATION

Rainfall → export quantity, export value, area and production

Any deviation of rain fall from the average causes loss to the production of mangoes. Unseasonal rain delays the flowering and fruiting of mango trees which affects badly both the quantity and quality of mangoes and the rainfall between September and November increases moisture in the air, setting off the delay in mango farming, which decreases the production of mangoes and eventually the mangoes export as well as export value also decreases.

Area → production and yield of mangoes

Generally mango orchards used to take 4 to 7 years to reach commercial proportion due to several factors including soil, climatic and cultural methods. A grafted mango tree takes about 5 to 8 years to fruit when put in the ground. But during those 5 to 8 years there is a lot to be done with the tree. As our study period is of 7 years, which means the new area planted with mango trees during the past 7 years have not started yielding fruits, which in turn decreases the production and yield as compared to area under its cultivation.

Fertilizer Consumption → Production and yield of mangoes

The utilization of fertilizer is not being properly utilized by the farmers as it is not being utilized efficiently which indicates that their usage is feasible and not optimum or misallocation of fertilizers .Therefore, the association of fertilizers to the production and yield is negative and can be enhanced if they will be used properly.

7.CONCLUSION

India is the second largest producer of fruits in the world after China followed by Brazil. A large variety of fruits are grown in India. Over the past 28 years, the area under fruits grew by 4.51 percent per annum and annual production by 8.57 percent. Fruits in India account for nearly 25.58 percent of total horticulture area but their contribution to total horticulture production is 31.23 percent. Mango is most widely grown fruit crop in India with a share of 34.71 percent in area and 22.41 percent share in production. Mango is of great economic value and has served as a means of revenue for farmers in India and it has high demand in the global market. The trade in horticultural goods can play a significant role in promoting economic development, especially in developing countries like India. It has been found from the study that India holds the first rank in area and production of mangoes in the world with 41.25 percent share in global area under mango cultivation and 40.38 percent share in global production of mangoes. The area, production and productivity of mango in India displayed compound annual growth rate of 4.45 percent, 5.55 percent and 1.05 percent between 20001-02 and 2017-18 respectfully. Furthermore, it is found from the study that total quantity of mango exported displayed negative compound annual growth rate of 2.42 percent while as total value of mango exported recorded remarkable compound annual growth rate of 7.63 percent between 2012-13 and 2017-18. The major export market for Indian mangoes is U.A.E with percentage share of 58.71 to total export value followed by U.K. (9.45 percent) and Saudi Arabia (5.09 percent).

8.RECOMMENDATIONS

- ❖It is found from the study that the quantity of mango exported from India decreased during the study period which is the main source of foreign exchange earnings; in this regard the government should implement better policies for export and assist farmers in the state to become certified for selling their produce to the foreign markets.
- ❖To compete in the export markets, need to produce quality mangoes that will meet the export market standards, including specifications in importing countries, timely delivery, ample steady supply, grading, packaging, contracts or agreements to build trust, and good quality of product at arrival in the export market.
- ❖Though we are the leading producers of mangoes in world. But we are far behind in case of productivity from most of the mango producing countries even our productivity is lower than Pakistan and global productivity. In this regard the government should focus on high yielding varieties to increase the yield of mangoes in the country to has to enhance its reputation at global level
- ❖U.A.E and U.K. are major export markets for Indian mangoes with percentage share of 58.11 and 5.97 percent to total exports. But the quantity of mango exported to U.A.E and U.K. has decreased during the study period and displayed negative compound annual growth rate of 8.94 and 4.31 percent respectfully, which is the indication of instability in export market. In this regard the government should take necessary steps to stabilize the export market.
- ❖Hoarding of agricultural products is very common in India, Fruits are kept in stock to resell at higher prices in off seasons. In this regard the government should enforce strictly the Prevention of Black Marketing and Maintenance Supply of Essential Commodities Act, 1980

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