



Research Paper

Export performance of the banana in India

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ABSTRACT : Banana is the second most important fruit in India next to mango. India is the second most producer, processor, exporter and consumer of banana. The study was based on secondary data collected from APEDA (Agriculture Produce Export Development Authority). The data pertained to the period of twenty year that is from 1993-94 to 2012-13. The major importing countries of banana from India during the period (1993-94 to 2012-13) UAE (29.53%), Nepal (20.91%), Saudi Arab (12.52%), Bahrain (7.52%), Kuwait (6.54%). The linear growth rate of export of banana from India indicated during the overall period . Positive and significant growth rates were seen in UAE, Nepal, Saudi Arab, Bahrain and Kuwait. The compound rates during the overall period were positive and significant. The export earning of Banana from India (in terms of value) during the overall period having the positive and significant.

KEY WORDS : Banana, export, Growth rate, Performance

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INTRODUCTION :

India has varied agro-climate zones which are highly favorable for growing a large number of Horticultural crops. The growing importance of commercial Horticulture is mainly important for nationwide increase in the national income. Banana is the second most important fruit in India next to mango. Banana is very popular fruit as its low price and high nutritive value. Its round the year availability for taste and medicinal value makes the favourite fruit among all classes of people. It is consumed in fresh cooled from both as ripened and raw fruits. Banana is a rich source of carbohydrates and rich in vitamins particularly vitamin B. it is a good source of potassium, phosphorus, calcium. Fruit is easy to digest, free from fats and cholesterol. Banana powder is used as the first baby food. Banana fruits and leaves have steady demand in market. The cultivation of banana

provides employment and income to the farmers. Banana being a highly perishable fruit is being marketed with in short span of time.

MATERIALS AND METHODS :

The present study is based on secondary data were collected from published source APEDA (Agriculture produce development authority) NHB (Database of National Horticultural Board, Ministry of Agricultural Govt. of India). The data pertained to the period of 20 years *i.e.* 1993-94 to 2012-13 during the study period were divided in to four periods.

Analysis of data:

For the analysis of the data, techniques of tabular analysis and functional analysis were employed to arrive at the meaningful conclusions. To assess the performance

of export during study period, data were divided into four periods viz., period-I (1993-94 to 1997-98), Period-II (1998-99 to 2002-2003), period-III (2003-04 to 2007-08) and period-IV (2008-09 to 2012-13). Growth rates of export in terms of quantity and value were computed separately for each period and overall period which was termed as period-V (1993-1994 to 2012-2013).

Fitting of trends:

To assess the export performance for export of banana from India both in terms of volume and value, linear and compound growth rates were computed by fitting the following types of log linear and linear equations to the time series data of export of banana separately for volume and value.

Linear trend equation:

$$y = a + bx + U$$

Linear average growth rate (LGR):

$$LGR = \frac{\hat{b}}{\bar{y}} \times 100$$

where,

\hat{b} = Trend value of y and x

\bar{y} = Mean value of GR.

Compound growth rate:

The semi log trend was used for computing compound growth rate:

$$CGR = (b - 1) \times 100$$

Semi log trend equation

Semi log/exponential function

$$Y = a \cdot b^x U$$

In the log form

$$\log y = \log a + x \log b + \log U$$

where,

Y = Export (metric tonn) total fruits in lakhs

a = Intercept

b = Regression co-efficient

x = Time variable

U = Random variable.

The growth rates were tested for their significance by using 't' statistics. Based on 'r' value of the trend curve, the LGR/CGR was selected for discussion. The significance of 'r' was tested by using 't' test:

$$t = \frac{r}{\sqrt{\frac{1-r^2}{n-2}}}$$

To judge the dynamics of export C.V. values were

computed by using the following formula:

$$CV = \frac{SD}{Mean} \times 100$$

RESULTS AND DATA ANALYSIS :

An attempt has been made to examine the export performance of the banana in terms of volume, quantities and value terms from the India during the period (1993-94 to 2012-13) are given in Table 1 and 2. From the table it is revealed that, the overall mean performance of the export of banana from India for period-I (1993-94 to 1997-98) was 22232.278 MT; however, overall export during period-II, period-III and period-IV was 6710.00, 13248.75 and 47564.33 MT, respectively (Table 1). During the overall period V, the export was 17436.590 MT. This indicated that the volume of export of banana from India during the period-IV increased as compared to period-I, II and III. The country wise export of banana from India for the period-I showed that the highest export to UAE (607.638 MT) followed by Saudi Arabia (341.414 MT). For the period-II, the highest export of banana was observed to UAE (3126.192 MT) during the period-IV. During the overall period-V, UAE and Nepal were the highest importer.

Co-efficient of variation :

The co-efficient of variation for the total export of banana from the country for the period-I was 122.718 per cent, period-II 37.031 per cent, period-III 17.69 per cent and period-IV 22.29 per cent. During the overall period-V, co-efficient of variation was 109.17 per cent (Table 1).

The country wise CV of export for period-I revealed that, it was the highest in UAE (211.437%) and the lowest in Nepal (76.196%); whereas, for the overall period-V, it was the highest in Bahrain (181.339%) and the lowest in Nepal (98.380%) (Table 1).

Growth rate :

The linear growth rate of exports of banana from India indicated that the period-IV export of banana to Oman, Nepal, registered positive and significant growth rates (Table 1). During the overall period-V, positive and significant growth rates were seen in UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, Kuwait and Maldives. The compound growth rate during the overall period was positive and significant for United Arab Emirates

Export performance of the banana

Table 1 : Country wise export of banana from India (volume)										(Qty. in MT)
Period	Countries									Total
	UAE	Saudi Arab	Oman	Nepal	Qatar	Bahrain	Kuwait	Maldives	Others	
Mean										
I (1993-94 to 1997-98)	607.63 (27.33)	314.41 (14.14)	18.29 (0.82)	184.51 (8.29)	158.04 (7.10)	166.25 (7.47)	70.26 (3.16)	13.88 (0.62)	663.03 (29.82)	2223.27 (100.00)
II (1998-99 to 2002-03)	3126.19 (37.62)	912.09 (10.97)	494.45 (5.95)	816.87 (9.83)	872.45 (10.50)	498.91 (6.00)	375.86 (4.52)	125.62 (1.51)	1087.53 (13.08)	8309.97 (100.00)
III (2003-04 to 2007-08)	3118.77 (23.62)	1053.80 (7.98)	479.83 (3.63)	5566.53 (42.16)	486.10 (3.68)	644.99 (4.88)	602.76 (4.56)	371.38 (2.81)	884.57 (6.70)	13248.75 (100.00)
IV (2008-09 to 2012-13)	14092.38 (29.62)	6582.07 (13.83)	2122.84 (4.46)	8259.86 (17.36)	2139.14 (4.49)	4024.21 (8.46)	3594.68 (7.55)	885.69 (1.86)	5863.42 (12.32)	47564.33 (100.00)
V (1993-94 to 2012-13)	5236.24 (29.53)	2222.37 (12.53)	778.86 (4.39)	3706.94 (20.91)	813.93 (4.49)	1333.59 (7.52)	1160.89 (6.54)	349.14 (1.96)	2124.64 (11.98)	17436.59 (100.00)
Co-efficient of variation										
I (1993-94 to 1997-98)	211.43	176.09	187.45	76.19	119.73	152.55	165.14	149.66	71.59	122.71
II (1998-99 to 2002-03)	260.84	320.31	280.23	160.26	40.99	20.74	30.17	47.48	14.79	37.03
III (2003-04 to 2007-08)	420.07	47.42	30.09	11.62	39.98	360.35	38.85	71.23	38.51	17.68
IV (2008-09 to 2012-13)	23.33	36.42	52.68	26.62	28.57	970.62	51.41	28.30	58.66	22.28
V (1993-94 to 2012-13)	107.63	128.07	124.77	98.38	105.42	181.33	145.47	109.97	128.87	109.16
Linear growth rate										
I (1993-94 to 1997-98)	94.72	70.18	77.00	-10.79	52.15	61.85	61.87	69.87	8.37	50.37
II (1998-99 to 2002-03)	-7.01	-11.36	1.96	78.25	-19.33	9.14	7.38	16.03	5.84	-13.40
III (2003-04 to 2007-08)	19.72	19.65	13.04	-3.94	17.13	16.03	22.94	38.11	-12.01	70.72
IV (2008-09 to 2012-13)	4.02	-8.87	29.23**	11.96	10.71	5.35	-2.73	-10.50	20.42	6.39
V (1993-94 to 2012-13)	14.96**	15.79**	16.56**	15.26**	14.31**	16.94*	17.62**	15.74	14.48**	15.73**
Compound growth rate										
I (1993-94 to 1997-98)	160.04	30.88	54.00	28.80	54.80	28.42	16.19	77.47*	-3.34	29.32
II (1998-99 to 2002-03)	-7.69	-10.19	1.90	150.44**	-18.02	-9.71	8.44	22.25	6.22	-17.97
III (2003-04 to 2007-08)	19.26	16.62	13.02	-3.86	16.57	15.44	27.12**	41.02**	-15.78	7.70
IV (2008-09 to 2012-13)	5.49	-8.90	34.48**	11.69	12.76	13.9	1.89	-9.23	49.96	8.53
V (1993-94 to 2012-13)	36.53	27.37	43.57**	35.86**	19.93**	24.53**	35.05	39.76**	13.53**	24.41**

(Bracket - figures indicate percentage to total)

* and ** indicate significance of values at P=0.05 and 0.01, respectively

(36.539%) Saudi Arabia (27.371%), Oman (43.573%), Nepal (35.863%), Qatar (19.932%), Bahrain (24.535%), Kuwait (35.056%) and Maldives (39.764%).

Country wise export of banana from India (in terms of value):

Country wise export of banana from India (in terms

Table 2: Country wise export of banana from India (value) (Values Rs. lakhs)										
Period	Countries									
	UAE	Saudi Arab	Oman	Nepal	Qatar	Bahrain	Kuwait	Maldives	Others	Total
Mean										
I (1993-94 to 1997-98)	112.79 (31.88)	59.96 (16.95)	3.32 (0.93)	3.76 (1.06)	22.57 (6.38)	24.75 (6.99)	12.51 (3.53)	2.56 (0.72)	111.46 (31.51)	353.71 (100.00)
II (1998-99 to 2002-03)	660.01 (19.98)	198.53 (6.01)	98.34 (2.97)	48.37 (1.46)	103.93 (3.14)	103.11 (3.12)	93.56 (2.83)	22.48 (0.68)	1974.00 (59.77)	3302.36 (100.00)
III (2003-04 to 2007-08)	728.24 (31.56)	224.90 (18.79)	99.14 (5.89)	174.38 (5.42)	111.17 (6.72)	136.11 (7.91)	135.55 (10.33)	42.08 (2.81)	161.49 (10.53)	1813.09 (100.00)
IV (2008-09 to 2012-13)	2828.35 (31.56)	1683.67 (18.79)	527.84 (5.89)	485.90 (5.42)	602.26 (6.72)	709.64 (7.91)	926.41 (10.33)	252.60 (2.81)	943.53 (10.53)	8960.20 (100.00)
V (1993-94 to 2012-13)	1332.35 (34.31)	541.76 (13.95)	182.16 (4.69)	178.10 (4.58)	209.98 (5.40)	243.40 (6.26)	292.01 (7.52)	104.93 (2.70)	797.62 (20.54)	3882.31 (100.00)
Co-efficient of variation										
I (1993-94 to 1997-98)	216.06	189.27	203.74	47.67	156.14	179.23	186.49	168.72	66.73	145.71
II (1998-99 to 2002-03)	26.02	33.47	34.090	140.64	36.01	26.48	33.71	43.67	202.77	116.50
III (2003-04 to 2007-08)	42.90	46.21	46.30	12.40	41.95	43.50	44.52	53.64	55.44	34.66
IV (2008-09 to 2012-13)	32.27	34.28	60.30	54.01	42.85	33.48	52.51	129.19	85.77	29.50
V (1993-94 to 2012-13)	121.17	135.35	140.54	129.18	126.27	124.06	150.91	243.99	54.29	114.16
Linear growth rate										
I (1993-94 to 1997-98)	96.64	78.80	87.47	8.03	70.05	75.60	76.37	75.64	12.41	62.01
II (1998-99 to 2002-03)	-5.26	-11.70	-1.13	57.53	-16.73	-13.75*	2.13	8.86	-44.86	28.59
III (2003-04 to 2007-08)	22.70*	23.38*	22.68*	-4.35	20.19*	22.52*	22.69*	30.31**	-9.80	17.29*
IV (2008-09 to 2012-13)	12.54	-1.94	30.72	29.27	13.72	2.97	-2.84	-27.90	25.57	9.66
V (1993-94 to 2012-13)	16.63**	17.11**	17.78**	17.97**	16.37**	16.46**	18.00**	17.99**	0.39	13.59**
Compound growth rate										
I (1993-94 to 1997-98)	183.52	44.06	90.51	21.14	76.96	45.03	31.55	153.21	4.89	42.55
II (1998-99 to 2002-03)	-5.68	-10.31	-2.80	80.30	-17.09	-14.19*	1.46	11.19	-28.82	-21.66
III (2003-04 to 2007-08)	25.95**	24.71*	28.57*	-4.30	24.21*	26.17*	31.49*	33.30**	-14.72	19.47**
IV (2008-09 to 2012-13)	14.10	0.05	35.17*	30.12**	16.85	5.61	4.01	-16.85	62.85	13.28
V (1993-94 to 2012-13)	43.26**	32.21**	52.16**	39.50**	26.72**	30.06**	40.43**	42.18**	9.78	25.56**

(Bracket - figures indicate percentage to total)

* and ** indicate significant of values at P=0.05 and 0.01, respectively

of value) during different period; Period-I (1993-94 to 1997-98), period II (1998-99 to 2002-03), period III (2003-04 to 2007-08), period IV (2008-09 to 2012-13) and for overall period-V (1993-94 to 2012-13) was observed in Table 2. From the table observed that, The value received from export of banana during period-I was 353.716 lakh, period-II 3302.366 lakh, period-III 1813 lakh and period-IV 10060.070 lakh. (Table 2). The country wise export earnings from banana revealed that in period-I the highest value was received from UAE (112.976 lakh) and the lowest from Oman (3.328 lakh). In period-II also, export earnings from UAE was the highest (660 lakh). In period-III, the highest export value was from UAE (728.242 lakh). In period-IV, the highest export value was from UAE (Rs.3828.356 lakh). During the overall period, export from banana was 3882.31 lakh to UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, Kuwait and Maldives (Table 2).

Co-efficient of variation :

The co-efficient of variation for the total export of banana from the country for the period-I was 145.710 per cent, period-II 116.507 per cent, period-III 34.668 per cent and period-IV 29.503 per cent. During the overall period it was 114.167 per cent (Table 2). CV for the country wise export for period-I revealed that, it was 216.065 per cent for UAE; whereas, during the overall period, it was the highest for Maldives (243.991%) and the lowest for UAE (121.177%).

Growth rate :

The export earnings from banana registered significant linear growth rate for period-III to UAE (22.704%), Saudi Arabia (23.381%), Oman (22.685%), Qatar (20.199%), Bahrain (22.520%), Kuwait (22.694%) and Maldives (30.319%). During the overall period, positive and significant linear growth rate was observed with UAE (16.635%), Saudi Arabia (17.114%), Oman (17.784%), Nepal (17.970%), Qatar (16.374%), Bahrain (16.468%), Kuwait (18.001%) and Maldives (17.991%). The compound growth rate in export of banana for period-III having significant growth rate. The countries were UAE (25.956%), Saudi Arabia (24.711%), Oman (28.570%), Qatar (24.216%), Bahrain (26.179%), Kuwait (31.495%), Maldives (33.300%). The overall period had the positive and significant value for UAE, Saudi Arabia,

Oman, Nepal, Qatar, Bahrain, Kuwait and Maldives. Similar work related to the present investigation was also carried out by Jadhav *et al.* (2003) and Rana (1985).

Conclusion:

The linear growth rate of export of banana (volume) from India indicated that the period-IV export of banana to Oman, Nepal, registered positive and significant growth rates. During the overall period-V positive and significant growth rates were seen in UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, Kuwait and Maldives. The compound rates during the overall period-V were positive and significant for UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, Kuwait and Maldives. The export earnings from banana (value) registered significant linear growth rate for period-III to UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, Kuwait and Maldives. During overall period positive and significant linear growth rate was UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, and Kuwait. The compound growth rate in export of Banana for period-III having significant growth rates in countries UAE, Saudi Arabia, Oman, Nepal, Qatar, Bahrain, Kuwait. During overall period-V having positive and significant value for UAE, Saudi Arabia, Oman, Nepal, Qatar and Kuwait.

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