

Research Article

Export potential of grapes from Karnataka

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SUMMARY : The export earnings from unit area of grapes was much higher when compared to that from the unit area of mangoes and other crops. Some of the European and Asian countries were having a greater demand for Indian grapes, resulting in a greater potentiality for export of grapes. Hence, the systematic economic study was carried by taking into consideration some necessary aspects like identifying potential international markets. Secondary data were collected from FAO, NHB and APEDA statistics yearbooks. The area and production of grapes in Karnataka were growing at the rate 6.30 and 3.36 per cent, respectively and share of Karnataka's grapes under area and its production also growing over the year. The quantity and value of fresh grapes export from India has been growing at the rate of 14.09 and 18 per cent, respectively and share of fresh grapes export out of total fruits exported from India also growing over the years and the extent of fresh grapes export out of grapes produced in India also increased over the years during study period.

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BACKGROUND AND OBJECTIVES

The growing importance of horticulture in strengthening the Indian economy has been realized of late. The contribution of agriculture towards national income was about 14.2 per cent as on 2009-10. Horticulture from an area of just 8.5 per cent of the gross cropped area of the country is estimated to have contributed over 24.5 per cent to the agriculture GDP of India. It is potential source of employment especially for the youth and women in the rural area where 72.2 per cent of the Indian population resides. The income generation through effective horticulture farming is higher as compared to agriculture farming. Horticultural farming has also increased the sustainability of the small land holding, helping the small and medium farmers who form the majority of farmers in India, to increase their per capita income. This in turn has increased the disposal income of the rural population and helped the overall economic development of the country. The process of globalization initiated in the early nineties has

resulted in free flow of goods including agriculture goods across international borders. The Indian farmer is being exposed to numerous challenges because of the growing phenomenon. However, if the challenges are overcome which opens up a great opportunity for horticulture exports from India since the country grows a variety of fruits of excellent quality. The Indian peasants need support from all the concerned stake holders to harness the growing opportunities for horticulture exports to different global markets.

Total export of grapes during 2010-11 was 99,270 tonnes worth 411.98 crores, which amounts for 80 per cent of the total production of grapes as against 24 per cent of all fruits grown in India. The major importers of Indian grapes are Netherlands, Bangladesh, UK, UAE, Russia, Saudi Arabia, Belgium, Thailand, Sweden, Norway, Oman, Bahrain, Sri Lanka, Mauritius, USA, Singapore and Hong Kong etc. Indian fresh grapes are highly competitive in the international market because of cultivation of Thompson Seedless a highly preferred variety with higher

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productivity and also lower cost of production (being a very labour intensive crop and the labour input being comparatively cheaper than other major grape producing countries). Also, grapes cultivation being largely in the hands of progressive and well-to-do farmers with better managerial abilities has made Indian grapes highly competitive.

Grapes is emerging as the most prominent fruit crop in India from the point of view of export and foreign exchange earnings. Farmers in many parts of the country have been showing a specific interest towards cultivation of grapes exclusively for export. The export earnings from unit area of grapes was much higher when compared to that from the unit area of mangoes and other crops. Some of the European and Asian countries were having a greater demand for Indian grapes, resulting in a greater potentiality for export of grapes. The systematic economic study by taking into consideration some necessary aspects like identifying potential international markets as well as analysis of growth rate in area and production will help in generating useful information for improving competitiveness and stability in export of grapes. Hence, the present study was undertaken with the objectives of assessing the export potential of grapes.

RESOURCES AND METHODS

Secondary data for the study were collected from various published sources. Time series secondary data on area, production, export of grapes and export of fruits for a period of 20 years from 1991-92 to 2010-11 were obtained from the publications of FAO, APEDA, NHB. Growth rate on area, production, export of grapes and export of fruits for a period of 20 years from 1991-92 to 2010-11. The linear, log-linear, exponential and power functions were some of the important functional forms employed to study the growth rates. Different functional forms were tried in the past for working out growth rates in area, yield and production. Some of the important forms tried were the linear growth model ($Y = a + bt$), exponential function ($Y = ab^t$) and quadratic function ($Y = a + bt + ct^2$). However, it was found that the exponential form of the function $Y_t = ab^t$ was the better and most frequently used one. Growth rates were computed using the exponential growth function of the form (Angles, 2001).

$$Y = a b^t e \quad \dots (1)$$

where,

Y=Dependent variable for which the growth rate is estimated *i.e.*, area, production and exports.

a= Intercept

b= Regression co-efficient

t= Time variable

e= Error term.

The compound growth rate was obtained from the logarithmic form of the equation (1) as below:

$$\ln y = \ln a + t \ln b$$

The per cent compound growth rate (g) was derived using the relationship

$$g = (\text{Anti log of } b - 1) \times 100$$

The co-efficient of variation was used as measure to study the variability in production and export of grapes from India. The co-efficient of variation or index of instability were computed by using the following formula:

$$CV = \frac{\text{Standard deviation (a)}}{\text{Mean (X)}} \times 100$$

That is co-efficient of variation was multiplied by the square root of the difference between the unity and coefficient of multiple determinations (r^2) in the cases where r^2 was significant to obtain the Instability Index.

$$\text{Instability index} = \frac{\text{Standard deviation}}{\text{Mean (X)}} \times 100 \times \sqrt{1 - r^2}$$

r^2 = RSS/TSS = Goodness of fit

RSS = Regression sum of square

TSS = Total sum of square.

OBSERVATIONS AND ANALYSIS

The export potentiality of grapes was estimated by the way of extent of grapes exported out of fruits exported, fresh grapes exported out of fresh grapes produced and destination-wise extent or share of export of grapes in respective year and also worked out compound growth rate and instability index for all. The share of Karnataka grapes in total Indian grapes export was also estimated. The area under grapes in India as a whole was 32.40 thousand hectare with the production of 668.20 thousand MT in 1991-92 and reached 111.00 thousand hectare area and the production of 1235.00 thousand MT in 2010-11 with a compound growth rate of 5.82 and 4.91 per cent area and production, respectively. Also registered instability of 12.39 and 21.27 per cent for area and production, respectively. On the other hand Karnataka's grapes grew at the rate of 6.30 per cent in area and 3.36 per cent in production from 1991-92 with the area 6.5 thousand hectare and 141.70 thousand MT to the area 18.1 thousand hectare and production of 330.30 thousand hectare in 2010-11 (Table 1). The share of Karnataka's area in the total of India was 20.06 per cent with the production share of 21.21 percent in 1991-92 and now it's share in area and production is 16.31 and 26.74 per cent, respectively. The average share of Karnataka's area in the total was 17.18 per cent and production was 18.94 per cent. Karnataka is the second highest producer of grapes in India after Maharashtra and has greater potentiality to contribute much to the total grape basket of India with the growing trend shown in this analysis.

This indicates that there was a greater potentiality of grapes production in Karnataka and India as there was a greater demand for this fruit in India and abroad. Same results were found in the study conducted by Khunt *et al.* (2008) on export potential and barrier in export of onion from Gujarat. The study revealed that the area, production, productivity were growing positively, indicating the assurance of onion supply for export as well as for sustaining fast growing onion dehydration industries of the state.

It could be seen from the Table 2 that in 1992-93, the quantity of 81241.24 MTs and value of Rs.14051.41 lakh of fresh fruits were exported from India and out of this 10801.04 MTs and value of Rs. 2178.8 lakh of fresh grapes were exported which accounts 13.30 per cent of quantity and 15.51 per cent of value of total fresh fruits exported. It has been growing since then with the compound growth rate of 11.77 per cent and the value 12.97 per cent in fresh fruits export and 14.09, 18.00 per cent in fresh grapes export from

India, respectively and now it has reached 936841.59 MTs and Rs. 122113.78 lakh in fresh fruits export, while 99311.83 MTs and Rs. 41206.32 lakh in 2010-11, which 10.60 per cent of quantity and 33.74 per cent of values in total fresh fruits exported from India. The average share for entire period in quantity exported was 16.75 per cent and in value was 25.50 per cent. This showed the greater scope and potentiality of grapes export from India since it earns the maximum portion (33.74 %) of foreign exchange out of fresh fruits exported from India. This revealed that there was a greater demand for the grapes in the market as compared to other fruits and greater potentiality for grapes to produce in the future. The similar results were found in Srivatsava and Kumar (1997) studied production, marketing and export potential of fruits and vegetables in Bihar that the total export of horticulture products in 1991-92 had been valued at Rs. 482.66 crores of which fresh vegetables and vegetable products accounted for Rs. 205.25 crores constituting 42.5 per cent. There was,

Table 1: Total area and production of grapes in India, Karnataka and share of Karnataka grapes in India's total

Year	India		Karnataka		Karnataka's Share (%)	
	Area (000 ha)	Production (000 mt)	Area (000 ha)	Production (000 mt)	Area (000 ha)	Production (000 mt)
1991-92	32.40	668.20	6.5	141.70	20.06	21.21
1992-03	34.00	653.10	5.8	128.40	17.06	19.66
1993-04	38.80	702.50	5.8	173.60	14.95	24.71
1994-05	42.10	672.90	5.2	157.10	12.35	23.35
1995-96	35.60	603.60	5.4	162.00	15.17	26.84
1996-97	42.90	1134.60	6.5	196.00	15.15	17.27
1997-98	40.80	969.30	7.5	226.60	18.38	23.38
1998-99	42.60	1082.70	7.5	226.60	17.61	20.93
1999-00	44.30	1137.80	7.6	228.20	17.16	20.06
2000-01	45.20	1056.90	8.2	144.10	18.14	13.63
2001-02	47.50	1184.20	10.0	169.70	21.05	14.33
2002-03	52.10	1247.80	10.2	168.92	19.58	13.54
2003-04	57.80	1474.80	9.1	170.90	15.74	11.59
2004-05	60.50	1564.70	10.1	185.50	16.69	11.86
2005-06	66.00	1649.60	10.8	190.30	16.36	11.54
2006-07	65.00	1685.00	10.3	216.60	15.85	12.85
2007-08	68.00	1735.00	14.3	258.80	21.03	14.92
2008-09	80.00	1878.00	14.9	269.00	18.63	14.32
2009-10	106.40	880.70	17.4	317.60	16.35	36.06
2000-11	111.00	1235.00	18.1	330.3	16.31	26.74
Average	55.65	1160.82	9.56	203.10	17.18	18.94
Compound growth rate (%)	5.82	4.91	6.30	3.36		
Instability index (%)	12.39	21.27	12.56	18.42		

Table 2: Total fruits and grapes exported from India and share of grapes in total fruits export

Year	Fresh fruits export		Fresh grapes export		Fresh grape export to fresh fruit export. share (%)	
	Qty (MTS)	Value (Lakh Rs.)	Qty (MTS)	Value (Lakh Rs.)	Qty (MTS)	Value (Lakh Rs)
1992-93	81241.247	14051.41	10801.035	2178.8	13.30	15.51
1993-94	84832.88	17942.00	15931.57	3392.00	18.78	18.91
1994-95	94712.95	21450.00	16876.95	7084.11	17.82	33.03
1995-96	109704.15	22993.42	22414.03	5475.00	20.43	23.81
1996-97	217753.32	24117.00	20999.29	5265.00	9.64	21.83
1997-98	135197.74	26874.00	23808.12	6600.23	17.61	24.56
1998-99	107081.33	25767.21	11525.41	3789.00	10.76	14.70
1999-00	126676.39	30037.00	14082.58	5554.00	11.12	18.49
2000-01	146742.69	37703.11	20647.58	8298.45	14.07	22.01
2001-02	176967.98	40530.00	14606.00	6021.00	8.25	14.86
2002-03	161923.75	43731.00	25680.62	11015.31	15.86	25.19
2003-04	243047.39	48911.23	26783.83	10589.00	11.02	21.65
2004-05	225533.76	45445.00	35936.17	11067.00	15.93	24.35
2005-06	302728.71	72091.58	54049.87	21460.85	17.85	29.77
2006-07	347659.84	87187.59	85897.79	30192.45	24.71	34.63
2007-08	365731.44	91184.64	96963.57	31782.51	26.51	34.86
2008-09	470796.02	115143.00	124627.97	40861.28	26.47	35.49
2009-10	475363.03	146660.70	131153.61	54533.89	27.59	37.18
2010-11	936841.59	122113.78	99311.83	41206.32	10.60	33.74
Average	253186.1	54417.56	44847.25	16124.54	16.75	25.50
Compound growth rate (%)	11.77	12.97	14.09	18.00		
Instability index (%)	29.78	13.51	42.74	28.11		

Table 3 : Fresh grapes produced and the extent of its export during last 20 years in India

Year	Fresh grapes produced (tonnes)	Fresh grapes exported (tonnes)	Extent of export (%)
1991-92	668200	11143	1.67
1992-93	653100	10770	1.65
1993-94	702500	15928	2.27
1994-95	672900	16813	2.50
1995-96	603600	22151	3.67
1996-97	1134600	20958	1.85
1997-98	969300	23680	2.44
1998-99	1082700	11382	1.05
1999-00	1137800	14006	1.23
2000-01	1056900	20646	1.95
2001-02	1184200	14571	1.23
2002-03	1247800	25568	2.05
2003-04	1474800	26470	1.79
2004-05	1564700	39340	2.51
2005-06	1649600	51652	3.13
2006-07	1685000	85897	5.10
2007-08	1735000	96964	5.59
2008-09	1878000	124626	6.64
2009-10	880700	131091	14.88
2010-11	1235000	99278	8.04
Average	1160820	43147	3.56
Compound growth rate (%)	4.91	13.63	
Instability Index (%)	21.27	42.90	

Table 4 : Destination -wise growth rates and instability in export of fresh grapes from India during (1992-03 to 2010-11)

Description	Export quantity		Export value		Unit value	
	Compound growth rate (%)	Instability index (%)	Compound growth rate (%)	Instability index (%)	Compound growth rate (%)	Instability index (%)
Bangladesh	20.84	100.80	22.02	98.93	0.97	62.49
Germany	27.79	67.71	30.34	53.32	1.99	26.30
Netherland	33.54	53.29	39.24	44.92	4.27	19.81
UK	7.90	33.12	14.03	46.60	5.68	31.85
UAE	6.22	35.76	11.13	30.90	4.63	12.24
Saudi Arabia	5.33	102.31	12.04	118.30	6.37	19.29
Others	18.28	43.17	23.93	44.85	4.78	20.45
Total	14.09	42.74	18.00	28.11	3.43	14.78

Note: Unit value – Rs/Kg realized

thus, tremendous scope for export potential for vegetables specially frozen vegetables and tomato products.

The export of fresh grapes of about 11143 tonnes out of 668200 tonnes of fresh grapes produced was observed in 1991-92 in India and accounted hardly to 1.67 per cent of total grapes produced (Table 3). Thereafter, the export of fresh grapes from India grew at the compound growth rate of 13.63 per cent and the share or extent of fresh grapes export out of fresh grapes produced in India also has been increasing continuously. At present (2010-11) 99,278 tonnes of fresh grapes exported from the production of 12, 35,000 tonnes, which accounts 8.04 per cent of export from total fresh grapes produced. As per the Table 4, in the destination-wise, the scope and potentiality of Indian grapes export to different countries are shown by the increase in the quantity and value of grapes export. The quantity and value export to Bangladesh is growing at the compound growth rate 20.84 and 22.02 per cent, respectively with the instability index of 100.80 and 98.93 per cent. The export to Germany and Netherland is growing faster than any other countries with 27.79 per cent in quantity and 30.34 per cent in values in case of Germany and 33.54 per cent quantity and 39.24 per cent

value in case of Netherland. This shows there is a greater potentiality to export and earn a foreign exchange from Netherland and Germany. When compared to these countries there is considerably lesser amount of foreign exchange from Bangladesh, UAE and Saudi Arabia. Moreover there is a greater scope and potentiality of Indian grapes to earn maximum foreign exchange from European countries.

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