

Growth trends in area, production, productivity and export of pomegranate in Karnataka : An economic analysis

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ABSTRACT

An attempt has been made in this paper to estimate the growth trends in area, production, productivity and export of pomegranate in Karnataka. For the present study, secondary data on area, production and productivity of pomegranate for major pomegranate growing districts of Karnataka namely Koppal and Bagalkot districts and state as a whole for the period 1987-88 to 2009-10 were collected from Department of Horticulture, Lalbhag, Bangalore and information was also obtained from the APEDA and FAO websites for the period from 1987-88 to 2009-10 both for quantity and value of exports. The data were analyzed through growth rate and co-efficient of variation techniques to study the growth in area, production, productivity and export of pomegranate in Karnataka. The production of pomegranate showed a significant growth of 2.60 per cent per annum at one per cent level of significance followed by growth in area with 2.29 per cent at 5 per cent level of significance for Karnataka. The significant increase in growth in area (24.00 %) and production (25.35 %) for Koppal district was due to implementation of NHM and NHB schemes by the Govt. of India. The highest growth was observed during pre-WTO period (42.33%) followed by overall period (20.61 %) and post-WTO period (20.52 %). As far as the value of export was concerned, highest growth was observed during the pre-WTO period with 50.84 per cent followed by post-WTO period (28.09 %) and overall period (27.86 %). The increase in production of pomegranate was due to the increase in area, rather than productivity, which calls for intensive efforts to increase productivity of pomegranate in the study area as well as in the state as a whole.

KEY WORDS : Area, Production, Productivity, Pomegranate, Compound growth rate, Instability, Export

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Pomegranate (*Punica granatum* L.) belongs to family Punicaceae is a favourite table fruit of the tropical and sub-tropical regions of the world. The fruit is native of Iran and extensively cultivated in Mediterranean countries like Spain, Egypt, Iran, Myanmar, China and India. In india, pomegranate is cultivated in the states of Maharashtra, Gujarat, Karnataka, Tamil Nadu, Uttar Pradesh, Haryana and Andhra Pradesh. The most promising cultivars grown in India

are Alandi, Dholka, Kabul, Kandhari, Muskat red, Vellode, Ganesh, G-137, Jyoti, Mridula, Phule arakta and Bhagwa.

The area and production of pomegranate in India during 2009-10 was 1,27,160 hectares, 8,20,970 metric tonnes respectively. Maharashtra accounts for maximum area (about 98,900 ha) particularly in Ahmednagar, Solapur, Satara, Sangali, Pune and Wardha districts. The total area under pomegranate in Karnataka during 2009-10 was 13,242 hectares (Anonymous, 2010a). Of which Bagalkot and Koppal districts of North Karnataka occupied nearly 50 per cent of State total area under pomegranate crop. Important varieties grown in Karnataka are Kesar (Bhagwa), Arkata (Mridula), Ganesh, Jyoti, G-137 and Ruby. Suitable soil and climatic conditions are responsible for concentration of pomegranate crop area in these two districts. Further, major

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are depicted in Table 2.

From Table 2 it could be observed that the production of pomegranate showed a significant growth of 2.60 per cent per annum at one per cent level of significance followed by growth in area with 2.29 per cent at 5 per cent level of significance for Karnataka. As far as the two selected districts were concerned, Koppal district showed substantial growth both in area and production of pomegranate as compared to the Bagalkot district. The growth in production of pomegranate in Koppal district was 25.35 per cent followed by 24.00 per cent growth in area at one per cent level of significance. On the other hand, the growth in area and production of pomegranate for Bagalkot district though significant but was comparatively less than Koppal district with 6.73 per cent (at 5 % level of significance) and 5.95 per cent (at 1 % level of significance). On the contrary, the productivity of pomegranate for Karnataka state, Bagalkot and Koppal districts though positive but was found to be non-significant with 0.30 per cent, 0.73 per cent and 1.09 per

cent per annum, respectively.

The significant growth in production of pomegranate for the state as well as for Bagalkot and Koppal district was not due to the increase in yield but mainly due to increase in area under pomegranate. The significant and vibrant increase in growth in area (24.00 %) and production (25.35 %) for Koppal district was mainly due to implementation of schemes for the farmers by National Horticultural Mission and National Horticultural Board wherein, subsidized inputs and technologies were provided to the farmers. Increase in prices of pomegranate during the year 2005 was due to export of the produce since Kesar and Arkatta varieties were in great demand from European countries due to their excellent quality parameters, which led to two-fold increase in area under pomegranate during 2006-07 resulting in considerable increase in production of the fruit. The reason for non-significant increase in yield for State as well as for the two districts may be mainly attributed to incidence of bacterial blight disease which had a devastating effect on the yield of the crop in the recent years.

Table 1: Area, production and productivity of pomegranate in selected districts and entire state of Karnataka during 1998-99 to 2009-10

Sr. No.	Year	Bagalkot			Koppal			Karnataka		
		A (ha)	P (tons)	Y(t/ha)	A (ha)	P (tons)	Y(t/ha)	A (ha)	P (tons)	Y(t/ha)
1.	1998-99	1334	10176	7.63	691	9700	14.04	10155	91696	9.03
2.	1999-00	1238	12380	10.00	475	4200	8.84	10689	115616	10.82
3.	2000-01	1048	10706	10.22	1286	15883	12.35	10684	111024	10.39
4.	2001-02	1016	9214	9.07	1332	16988	12.75	14508	143678	9.90
5.	2002-03	1016	9214	9.07	1372	17660	12.87	12728	124666	9.79
6.	2003-04	1702	22095	12.98	1483	19142	12.91	11161	116892	10.47
7.	2004-05	2293	29946	13.06	1917	26379	13.76	12025	133232	11.08
8.	2005-06	1859	27578	14.83	2215	28728	12.97	10976	127266	11.59
9.	2006-07	1781	26314	14.77	4151	54103	13.03	12042	129547	10.76
10.	2007-08	1913	14272	7.46	5299	66088	12.47	13859	134108	9.68
11.	2008-09	2033	15883	7.81	5993	71502	11.93	14996	140682	9.38
12.	2009-10	1744	16823	9.65	4846	68855	14.21	13242	138998	10.50

Source: Department of horticulture, Lalbagh, Bangalore (Anonymous, 2010b)

Table 2: Compound growth rates and instability in area, production and productivity of pomegranate in Karnataka

Sr. No.	Particulars	Compound growth rate (%) (1998-99 to 2009-10)		
		Karnataka	Bagalkot district	Koppal district
1.	Area	2.29**	5.95*	24.00*
2.	Production	2.60*	6.73**	25.35*
3.	Yield	0.30	0.73	1.09
Co-efficient of variation (%)				
1.	Area	13.16	27.50	74.69
2.	Production	11.81	44.37	74.28
3.	Yield	7.24	25.51	10.92

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

It could be observed from Table 2 that maximum instability was observed in the case of Koppal district with respect to area and production of pomegranate. The variation in area was found to be 74.69 per cent and it was 74.28 per cent for production. The instability in yield for Koppal district was to the extent of 10.92 per cent. Similarly the variation in production was found to be highest in Bagalkot district with 44.37 per cent followed by variation in area with 27.50 per cent. As far as the Karnataka State was concerned, the instability in area, production and productivity of pomegranate was comparatively less as compared to the

other two districts with 13.16, 11.81 and 7.24 per cent, respectively.

Export of pomegranate from India:

The results presented in Table 3 revealed that the proportion of pomegranate export of the total production has increased from 0.4 (318.9 tons) to 4.1 per cent (33,415.08 tons) during the period from 1987-88 to 2009-10. Though export of pomegranate is currently directed to European countries but these fruits are mostly consumed in the Middle and Far East as well as in Mediterranean countries

Table 3: Export of pomegranate from India (1987-88 to 2009-10)

Year	Production (tons)	Export (tons)	Export as % of production
1987-88	81150	318.49	0.4
1988-89	83410	833.06	1.0
1989-90	85220	824.63	1.0
1990-91	87240	795.94	0.9
1991-92	127010	1790.32	1.4
1992-93	93840	1627.94	1.7
1993-94	110400	2623.24	2.4
1994-95	129900	4144.49	3.2
1995-96	123400	4255.23	3.4
1996-97	98670	4768.39	4.8
1997-98	113640	5599.73	4.9
1998-99	151110	4239.15	2.8
1999-00	195856	5726.37	2.9
2000-01	245689	4455.54	1.8
2001-02	345586	4773.70	1.4
2002-03	458878	6303.80	1.4
2003-04	664900	10315.97	1.6
2004-05	792456	14039.99	1.8
2005-06	849100	19652.15	2.3
2006-07	839650	21670.43	2.6
2007-08	884129	35175.17	4.0
2008-09	807173	34811.21	4.3
2009-10	820970	33415.08	4.1

Table 4: Compound growth rates and variation in export of pomegranate from India

Sr. No.	Particulars	Compound growth rate (%) (1987-88 to 2009-10)		
		Pre-WTO (1987-88 to 1995-96)	Post-WTO (1996-97 to 2009-10)	Overall (1987-88 to 2009-10)
1.	Quantity (kg.)	42.33*	20.52*	20.61*
2.	Value (Rs.)	50.84*	28.09*	27.86*
Co-efficient of variation (%)				
1.	Quantity (kg.)	73.51	82.84	113.43
2.	Value (Rs.)	82.30	100.56	138.60

* indicate significance of value at P=0.01

and the United Kingdom.

Growth and variation in the export of pomegranate from India:

The compound growth rates of pomegranate export were computed for the pre-WTO, Post-WTO and the overall periods (1987-88 to 2009-10) and the results are presented in Table 4.

In terms of quantity and value of pomegranate exported from India, highest growth was observed during the pre-WTO period as compared to the post-WTO period as revealed by statistical figures of 42.33 per cent and 50.84 per cent as against 20.52 per cent and 28.09 per cent for quantity and value of pomegranate exported, respectively. However, the overall growth in quantity and value of pomegranate followed a similar trend as that of pre-WTO period. The high and significant growth during pre-WTO period may be because of lower base compared to post-WTO period. However, the high and significant growth rate in quantity exported in all the periods was mainly because of increased demand in Middle and Far East as well as in Mediterranean countries and also in the recent years there was high demand for Indian pomegranate in the European countries. In tune with the increase in quantity exported the growth in the export value was also higher during the pre-WTO period.

The instability in the export of pomegranate both in terms of quantity and value were assessed through the coefficient of variation (CV) and the results are presented in the Table 4. It can be observed from the table that the CV (82.84 %) was higher in terms of quantity during post-WTO period compared to pre-WTO period (73.51 %). Similarly, in terms of value, the CV was again higher in post-WTO period (100.56 %) as compared to pre-WTO period (82.30 %). The CV for overall period was relatively higher than pre and post-WTO periods both in terms of quantity and value with 113.43 and 138.60 per cent, respectively. The above results suggest that the fluctuation in quantity exported was higher during post-WTO period compared to pre-WTO period and this had impact on the overall period. It is imperative to note that the CV of export value was relatively more than the CV of quantity exported in all the periods. This may be due to variation in the exchange rates as pomegranate was exported to different countries especially in the recent years, Indian pomegranates have found place in the European countries also.

Conclusion:

The growth rate analysis indicated that the increase in production of pomegranate was due to the increase in area, rather than productivity, which calls for intensive efforts to increase productivity of pomegranate in the study area as well as in the state as a whole. This crop has good commercial potential and the area under this crop is significantly increasing in the study area. Hence, Government should plan for establishing new processing units, provide scientific storage facilities and forward linkage in the region to safeguard the interest of pomegranate growers. Breeding of resistant varieties is essential against the control of deadly diseases like bacterial blight and anthracnose.

The total quantity of pomegranate exported from India showed a significant and positive compound growth rate for all the three periods. It was mainly because of increased demand in Middle and Far East as well as in Mediterranean countries and also in the recent years there is high demand for Indian pomegranate in the European countries. Consumption is dispersed and slow to take off, as western consumers consider it as exotic and difficult to eat. This indicates that there is a need to harness other potential markets too considering the quality requirements and taste preferred by the consumers.

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