

GROWTH PERFORMANCE OF CITRUS IN HARYANA

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ABSTRACT

The horticulture is being acclaimed as the most dynamic and sustainable economic activity in agriculture sector, which covers broad range of crops such as fruits, vegetables, flowers, spices, plantations etc. The present study undertaken makes an attempt to assess the performance regarding growth in area and production of citrus during the period 1991-92 to 2017-18 i.e. pre NHM and post NHM scheme impact on citrus growth in Sirsa and Fatehabad districts of Haryana. The present study is based on the secondary data and compound growth tool has been used for analysis of the data. The results came out from the present study shows that compound growth rate of area and production of citrus are significant after post NHM era as compare to pre NHM period.

Key words: Citrus, National Horticulture Mission, Area and Production.

INTRODUCTION

The horticulture is being acclaimed as the most dynamic and sustainable economic activity in agriculture sector, which covers broad range of crops such as fruits, vegetables, flowers, spices, plantations etc. (Chand and Pandey 2008). The heterogeneity in agriculture leads to more sustainable, profitable and productive farming which helps in generating productive employment (Christian and Zala, 2014). Apart from this, a great nutritional value consists in horticultural crops. Fruits and vegetables are always known as a great source of nutrients which are essential for human health. Horticultural crops can play a considerable role in improving the nutritional intake of vegetarian people. They are important source of multi- vitamins, minerals and folic acid (Gill and Mahindra, 2010).

India is known as a basket of fruits and vegetables in the world. Its widely acceptable variety of climatic conditions produce a range of horticultural crops such as fruits, vegetables, ornamental plants, medicinal plants, aromatic plants, spices and plantation crops etc. (Gupta, 2012). The cultivation of fruits in India had its origin as early as 7000 BC. The first fruit cultivated by man was known to be palm, followed by pomegranate (Janick, 2005). In India, banana, mango, citrus, papaya and apple are majorly cultivated fruit crops. Banana, mango, citrus, papaya, guava and grapes had 32.6 percent, 22.1 percent, 12.4 percent, 6.6 percent, 3.9

percent and 3.1 percent share in total fruits production in the country respectively in 2012-13 (Indian Horticulture Database, 2013). Citrus ranked third in tropical fruit crops after banana and mango, with a total cultivated area of 1,042 thousand hectare and 10,090 thousand metric tonnes of production (Bhat *et. al.*, 2015). Citrus holds second rank in form of cultivated area i.e. 502800 ha and third ranks in production i.e. 4396700 million tons in fruit crops grown in India and well known world second mainly chief fruit crop of the world trade in fresh fruit form (Yadav *et. al.*; 2013). The citrus occupied an area of nearly 0.81 M. hectare with production of 7.50 MT and yield of 9.26 tons/hectare and holds fifth rank in production of fruits in the world (Bhat *et. al.*; 2011) It is primarily consumed in fresh, processed (juice, jam, jelly, squash etc.), medicinal and cosmetic forms (Gill and Mahindra, 2010). Citrus fruit ingredients are vitamins, minerals, fibre, and phyto-chemicals (carotenoids, flavonoids, and limonoids) that have a lots of biological health benefits. Citrus fruits have antioxidant and anti-mutagenic properties that improve bone density, cardio-vascular, and immune system of human body (Turner and Burri, 2013). Citrus belongs to the ancestors of Rutaceae, well known tropical and sub tropical fruits crop of the world. Citrus plant is known since the ancient times of India. The Citron was referred in the 'Wajasuney Samhita', a collection of sacred Brahma texts written in Sanskrit before 800 BC (Dugo and Giacomo, 2002). World production of citrus fruit has increased in the last decades of the 20th century. Total annual citrus production was estimated at over 105 million tons in the period of 2000 to 2004 and mandarin constitutes more than half of global citrus production (Yusuf and Salau, 2007). Haryana has 13th rank in citrus cultivation (Kumar, 2011) and nearly all districts are engaged in citrus cultivation at minor level; while Sirsa, Fatehabad, Hisar, Bhiwani and Narnaul are leading citrus producer; and their shares in total cultivated area under citrus is 48 percent, 12 percent, 9 percent, 8 percent and 7 percent respectively in Haryana (NHB, 2010-11). Therefore, it is necessary to examine the growth rate of area and production of citrus in Haryana. Has the cultivated area and production of citrus changed after implementation of NHM scheme in Haryana? The objective of the study is to examine the growth in area and production of citrus in Haryana. It is assumed that there is an increase in area and production of citrus in Haryana.

Methodology

The present study relates to the state of Haryana and covers the period ranging from 1991-92 to 2017-18. The data related to citrus area and production has been obtained from different yearly published horticulture statistical abstracts of Haryana for the study period. The data has been compiled and analyzed for the period 1991-92 to 2017-18 by dividing the entire study period into two periods with 1st period ranging from 1991-91 to 2004-05, 2nd period ranging from 2005-06 to 2017-18.

Compound growth rate: It is applied to examine the growth rate of area and production of citrus in Sirsa and Fatehabad districts of Haryana. The study period ranges between the years 1991-92 to 2017-18.

$$Y=ab^T \quad (\text{Porwal, 2012})$$

Where,

Y= Area and production of citrus,

T= Time element i.e. year

Ut= Disturbance term

b= growth rate over a time period

RESULTS AND RECOMMENDATIONS

Horticulture department of Haryana came in to existence after its bifurcation from agriculture department in the year 1990-91. In the year 2005-06, NHM (National horticulture mission) scheme was launched to promote area, production, post-harvest management, marketing of horticultural crops in the state. Citrus growers take benefits of this scheme in form of subsidy for plant and plantation, fertilizers and pesticides, drip irrigation and pond construction etc. Therefore, it is essential to evaluate the impact of NHM scheme on area and production of citrus. Thus, the study phase is divided into two parts pre NHM compound growth rate and post era growth rate in area and production of citrus. The accessibility of compound growth rate is important to know the direction of change over the period of time, for new policy implementation, and employment etc.

Table 1: Area and Production of citrus in Haryana State from the year 1991-92 to 2017-18

year	Sirsa		Fatehabad		Haryana	
	Area (Hectare)	Production (Tonnes)	Area (Hectare)	Production (Tonnes)	Area (Hectare)	Production (Tonnes)
1991-92	1898	18950	0	0	3189	32630
1992-93	2015	18340	0	0	3301	33380
1993-94	2124	18855	0	0	3580	25719
1994-95	2244	19900	0	0	3824	28500
1995-96	2328	20400	0	0	4043	32400
1996-97	2420	24520	0	0	4278	37800
1997-98	2500	24570	0	0	4590	42900
1998-99	2586	24929	276	975	4895	39154
1999-00	2746	21439	314	1480	5301	37509
2000-01	2858	28075	328	1420	5657	44889
2001-02	2727	38134	344	3993	5576	37830
2002-03	2617	29950	359	2217	5428	49735
2003-04	2747	35947	372	655	5360	48465

2004-05	2643	39160	264	525	4292	51395
2005-06	3042	50281	403	1670	5041	69558
2006-07	3906	57088	616	4808	6419	77433
2007-08	4701	43288	757	7000	8214	66842
2008-09	5905	36831	896	8085	11223	63164
2009-10	7064	65114	1048	12821	13837	98333
2010-11	8299	93771	2111	12551	17151	129996
2011-12	8562	151006	2144	16125	17664	214168
2012-13	9062	146724	2225	16748	18775	225054
2013-14	9432	146387	2294	19265	19382	235345
2014-15	9450	198332	2323	23104	19499	302065
2015-16	9659	191789	2276	23144	19652	301764
2016-17	9748	221229	2276	23625	20054	323923
17-18	10310	226673	2285	24374	20826	335822

Source: www.hortharyana.gov.in

Haryana has 13th rank in citrus cultivation. It is evident from the table 1, that area and production of citrus fruit in Haryana have not increased continuously up to the year 2004-05 due to problems of high cost of establishment, lack of awareness among growers, lack of government assistance to growers etc. while after implementation of NHM scheme of government in the year 2005-06 has brought quantum increasing jumps in area and production of citrus. It is clear from the data presented in table 4.2 that district Sirsa holds nearly 50 to 55 percent of area of citrus and has first rank in Haryana while district Fatehabad production was started in the year 1998-99 and now holds nearly 10 to 15 percent area under the cultivation of citrus.

Table 2: Compound growth rate of area and production of citrus in Haryana

Particular	Sirsa		Fatehabad		Haryana	
	1 st Period Before NHM 1991-92 to 2004-05	2 nd Period After NHM 2005-06 to 2017-18	1 st Period Before NHM 1991-92 to 2004-05	2 nd Period After NHM 2005-06 to 2017-18	1 st Period Before NHM 1991-92 to 2004-05	2 nd Period After NHM 2005-06 to 2017-18
Area (hectares)	2.8	9.7	1.1	15.2	4	11.7
Production (tonnes)	6.1	17.2	-10.3	19.9	44.4	17.7

Source: Computed from the data in table 1.

The growth behaviour of area and production of citrus before and after the implementation of NHM scheme in Sirsa, Fatehabad and Haryana are presented through table 4.3. It is revealed through the figures that a positive impact of the scheme on the area allocation and production of citrus has been observed in the districts under consideration. In case of area, it was found that the growth rate has been observed as 2.8 percentages before the implementation of the NHM scheme in district Sirsa while it has increased to 9.7 per cent during post era of the scheme. Almost same trends have been revealed in case of district Fatehabad and Haryana where growth rate remained as 1.1 per cent during first period of the study while after the implementation of the scheme it increased up to 15 percentage in the same district, as far as the whole of the Haryana state is concerned, it has been recorded as 4 per cent before the implementation of the NHM scheme while it has increased to 11.7 per cent during post era of the scheme. So, it can be concluded from the discussion in relation to the scenario of area allocation under citrus that the scheme commenced in India to improve the production which has been proved fruitful and the same success story can be said in relation to the production of the crop in point as there have been significant increase in the production of citrus in the regions selected for the study.

CONCLUSION AND SUGGESTIONS

The important findings came out from the present study specify that compound growth rates are highly significant after implementation of NHM scheme in Haryana. Growth rate in area and production of citrus is highly increased in Sirsa and Fatehabad districts of Haryana, while it has insignificant impact on total production of citrus in Haryana. Appropriate price policy in regards to MSP (minimum support price) policy should be formulated to support the growth in area and production. The new production technology among the growers should be popularize to avoid its commercial exploitation, sincere efforts are required to be made to educate and convince the growers for adoption of the recommended practices of production and marketing of citrus in Haryana.

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