



Trends and Growth in Area, Production and Productivity of Apples in India from 2001-02 to 2017-18

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ABSTRACT: - India produces all deciduous fruits including pome fruits (apple and pear) and stone fruits (peach, plum, apricot and cherry) in considerable quantity. In India apple is mostly grown in the states of Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Arunachal Pradesh. During the last decade, India has observed an increasing trend in the area, production and productivity of crops in the horticulture sector. Apple production plays an imperative role in humanizing the standard of living, per capita income and employment generation. Over the last decade, the area under horticulture sector grew by about 2.7% per annum and annual production increased by 7.0%. During 2010-11, the production of horticultural crops was about 240.531 million tons from an area of 21.825 million hectares (ha). The income per acre in apple cultivation is much higher than any other horticulture crops, if it is done in a very systematic way. Apple cultivation is highly gainful economic activity. It is farm-based, labor intensive and commercially attractive economic activity. The present paper has tried to analyze the trends and growth in the area, production and Productivity of apples in the horticulture Sector of India from the year 2001-02 to 2017-18. It has also visualized on finding out the annual compound growth rates (ACGR), average and, annual growth rate of area, production and Productivity of apples in India for a period of seventeen years i.e. from the year 2001-02 to the year 2017-18.

Keywords: - Deciduous, Apple, Trend, Area, Production, Productivity, ACGR.

INTRODUCTION:

India produces all deciduous fruits including pome fruits (apple and pear) and stone fruits (peach, plum, apricot and cherry) in considerable quantity. In India apple is mostly grown in the states of Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Arunachal Pradesh is showing in figure 1 below.

hectares of land apple gardens are established and all the agricultural land has been converted in to the horticulture land. For the transformation of land use change the economic behavior of the people are totally changed and most of the population in these two districts are wholly dependent up on apple industry. In U.P. hills. In more recent times improved spur types and standard color mutants with 20-50% higher yield potential are favored. The horticulture sector covers a wide range of crops e.g., fruit crops, vegetables crops, potato and tuber crops, ornamental crops, medicinal and aromatic crops, spices and plantation crops. While the first few Five Year Plans assigned priority to achieving self sufficiency in food grain production, over the years, horticulture has emerged as an indispensable part of agriculture, offering a wide range of choices to the farmers for crop diversification. It also provides ample opportunities for sustaining large number of agro industries which generate substantial employment opportunities³. The horticulture sector contributes about 24.5% of the GDP from about 8% of the area. Agriculture sector is considered as backbone of Indian Economy and around 50% work force is still dependent on Agriculture for livelihood, despite of structural changes taking place. Presently Agriculture sector (including livestock) is contributing 14% to the Gross Domestic Product (GDP) at National level, and 20.59% to GSDP (at current prices) but it is still the main occupation that majority of the rural population is dependent. Therefore, high growth of Agriculture is indispensable for faster inclusive and sustainable development. Area under apple cultivation in India has increased tremendously from 241.8 8 thousand hectares in 2001-02 to 306.0 thousand hectares in 2017-18 and the production has increased as well from 1158.4 thousand MTs in 2001-02 to 2371.0 thousand MTs in 2017-18.the survey shows that the average area under the cultivation of apples during 2001-02 to 2017-18 was 271.1 thousand hectares and the minimum production during the same period was 1986.3 thousand MT. During the analysis period the highest production of apples was recorded in year 2010-11.

Prime objectives of study:

1. To analyze the trends in area, production and productivity of apple in India from 2001-02 to 2017-18.
2. To analyze the annual growth rate of area, production and productivity of apple in India from 2001-02 to 2017-18.
3. To analyze the percentage share area and production of apple with total area and production of fruits in India from 2001-02 to 2017-18.

METHODOLOGY:

To fulfill the mentioned objectives of the present paper “Trends and Growth in Area, Production and Productivity of Apples in India from 2001-02 To 2017-18” the secondary source of the data has

been used and the data has collected from the reliable sources such as National Horticulture Board (NHB), Directorate of Horticulture jammu and kashmir survey of statistics government of jammu and kashmir, government official records, Books, journals, magazines, websites of horticulture and agriculture and other active related agencies of the Department of horticulture in the country etc. The period of analysis ranged from 2001-02 to 2017-18. In this study simple statistical tool like average, annual growth rate, percentage and Annual compound Growth Rate were used.

DATA ANALYSIS:

Table 1 shows the statistics regarding area, production and productivity of apples in India from the year 2001-02 to the year 2017-18. In the year 2001-02, the area, production and productivity of apples in India was 241.8 thousand hectares, 1158.4 thousand MTs and 4.8MTs/hectare respectively. In the years 2002-03 and 2003-04 the area under apples in India was 193.1 and 201.2 thousand hectares respectively, production was 1348.4 and 1521.6 thousand MTs respectively and productivity was 7.0 and 7.6 MTs/hectare respectively. In the year 2004-05 the area, production and productivity of apples in India was 230.7 thousand hectares, 1739.0 thousand MTs and 7.5MTs/hectare respectively. Similar rising trends in area, production and productivity of apples in India were also witnessed in the remaining years. In the year 2017-18, the area, production and productivity of apples was 306.0 thousand hectares, 2371.0 thousand MTs and 7.7MTs/hectare respectively in India.

Table 2 highlights the annual growth rate of area, production and productivity of apple in India from 2001-02 to 2017-18. During the study period Year 2002-03, 2005-06, 2012-13 and 2015-16 shows the negative annual growth rate in area of apple this can be clearly seen from the figure 3.1 while as there was highest annual growth rate in the year 2004-05. Similarly on the production side year 2006-07, 2009-10, 2011-12, 2012-13, 2014-15 and 2016-17 shows the negative annual growth rate while as the year 2010-11 shows the highest annual growth rate during the study period. Similar is the case with productivity side of apple.

Table 3 shows the Percentage Share of Apple in Total Area of Fruits in India From 2001-02 To 2017-18. In the year 2001-2002 the percentage share area of apple in total fruits was 5.85 percent which is the highest among the remaining years of study period. From the year 2002-03 up to 2013-14 the percentage share area of apple in total fruits was almost same with slight variations. In the year 2014-15 the percentage share area of apple in total fruits was 5.11. The percentage share area of apple in total fruits during the year 2017-18 was 4.69% which is represented in the fig.4

Table 4 shows the Percentage Share of Apple in Total production of Fruits in India From 2001-02 To 2017-18. In the year 2001-2002 the percentage share production of apple in total fruits was 2.68 percent. Year 2010-11 shows the highest percentage share production of apple in total production of apples during the study period. From the year 2003-04 up to 2005-06 the percentage share production of

apple in total fruits was increasing almost in same pace with slight variations. In the year 2006-07 the percentage share production of apple in total fruits was 2.71%. The percentage share production of apple in total fruits during the year 2008-09 up to 2017-18 remains around 2 to 3 percent and in the year 2017-18 it was 2.44 percent which is indicated in the fig.5

Table 1: Area, Production and productivity of Apples in India from 2001-02 to 2017-18
(Area in 000 Hectares, Production in 000 M T and Productivity MT/Hectare)

Year	Apple		
	Area	Production	Pdy
2001-02	241.8	1158.4	4.8
2002-03	193.1	1348.4	7.0
2003-04	201.2	1521.6	7.6
2004-05	230.7	1739.0	7.5
2005-06	226.8	1814.0	8.0
2006-07	252.0	1624.0	6.4
2007-08	264.0	2001.0	7.6
2008-09	274.0	1985.0	7.2
2009-10	282.9	1777.2	6.3
2010-11	289.1	2891.0	10.0
2011-12	321.9	2203.4	6.8
2012-13	311.5	1915.5	6.1
2013-14	313.0	2497.7	8.0
2014-15	319.2	2133.8	6.7
2015-16	277.2	2521.1	9.1
2016-17 ^{**}	305.0	2265.0	7.4
2017-18 ^{**}	306.0	2371.0	7.7
AVERAGE	271.1	1986.3	7.4
CAGR			

Source: Horticultural Statistics at a Glance, Dept. of Agriculture cooperation and farmer's welfare, Govt. of India.

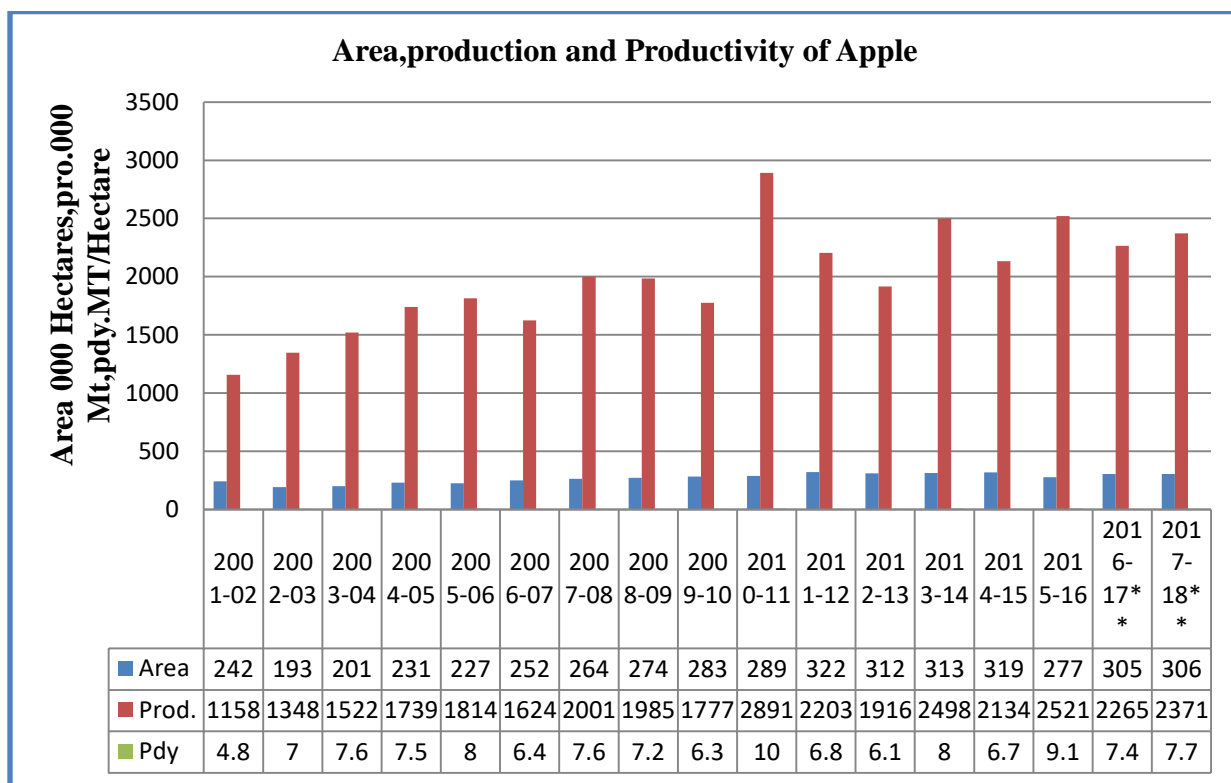


Figure 2: Area, Production and productivity of Apples in India from 2001-02 to 2017-18

Table 2: Annual Growth Rate of Area, Production and Productivity of Apples in India from 2001-02 to 2017-18. (Area in 000 Hectares, Production in 000 M T and Productivity MT/Hectare)

Year	Area	%growth in area	Prod.	%growth in Prod.	Pdy	%growth in pdy
2001-02	241.8	-	1158.4	-	4.8	-
2002-03	193.1	-20.14	1348.4	16.40	7	45.83
2003-04	201.2	4.19	1521.6	12.84	7.6	8.57
2004-05	230.7	14.66	1739	14.28	7.5	-1.31
2005-06	226.8	-1.69	1814	4.31	8	6.66
2006-07	252	11.11	1624	-10.47	6.4	-20
2007-08	264	4.76	2001	23.21	7.6	18.75
2008-09	274	3.78	1985	-0.79	7.2	-5.26
2009-10	282.9	3.24	1777.2	-10.46	6.3	-12.5
2010-11	289.1	2.19	2891	62.67	10	58.73
2011-12	321.9	11.34	2203.4	-23.78	6.8	-32
2012-13	311.5	-3.23	1915.5	-13.06	6.1	-10.29
2013-14	313	0.48	2497.7	30.39	8	31.14
2014-15	319.2	1.98	2133.8	-14.56	6.7	-16.25
2015-16	277.2	-13.15	2521.1	18.15	9.1	35.82
2016-17**	305	10.02	2265	-10.15	7.4	-18.68
2017-18**	306	0.32	2371	4.67	7.7	4.05

Calculated by Author from table 1

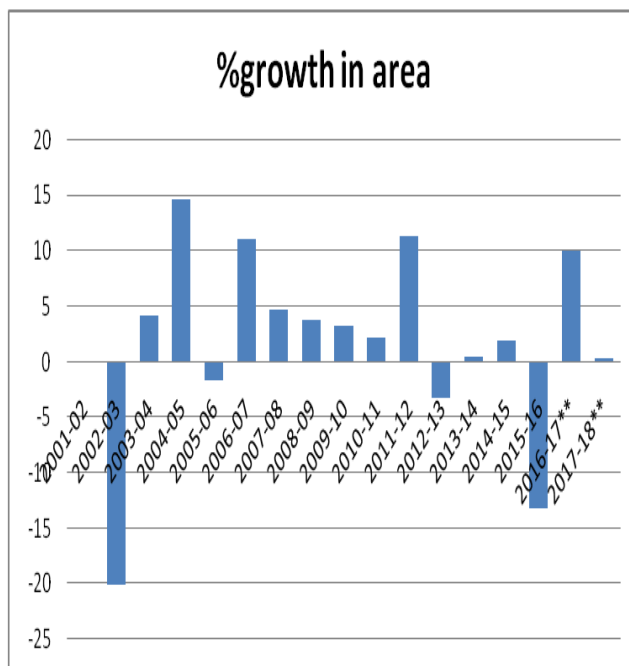


Figure 3.1 showing annual growth rate of area

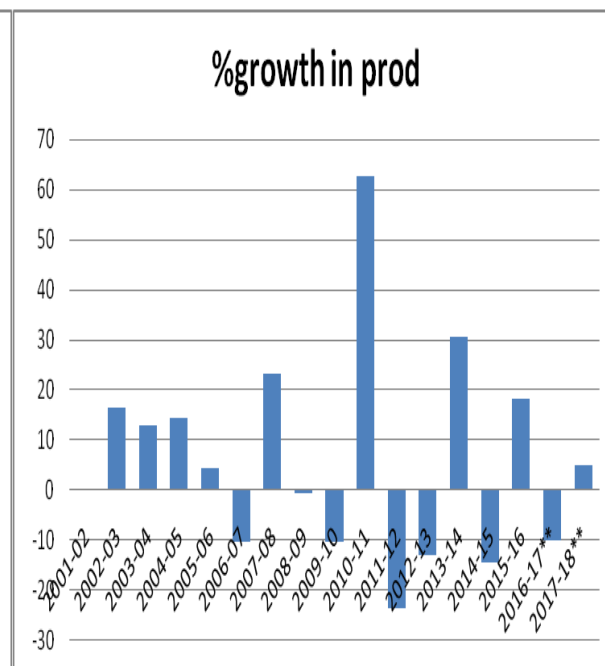


Figure 3.2 showing annual growth rate of production

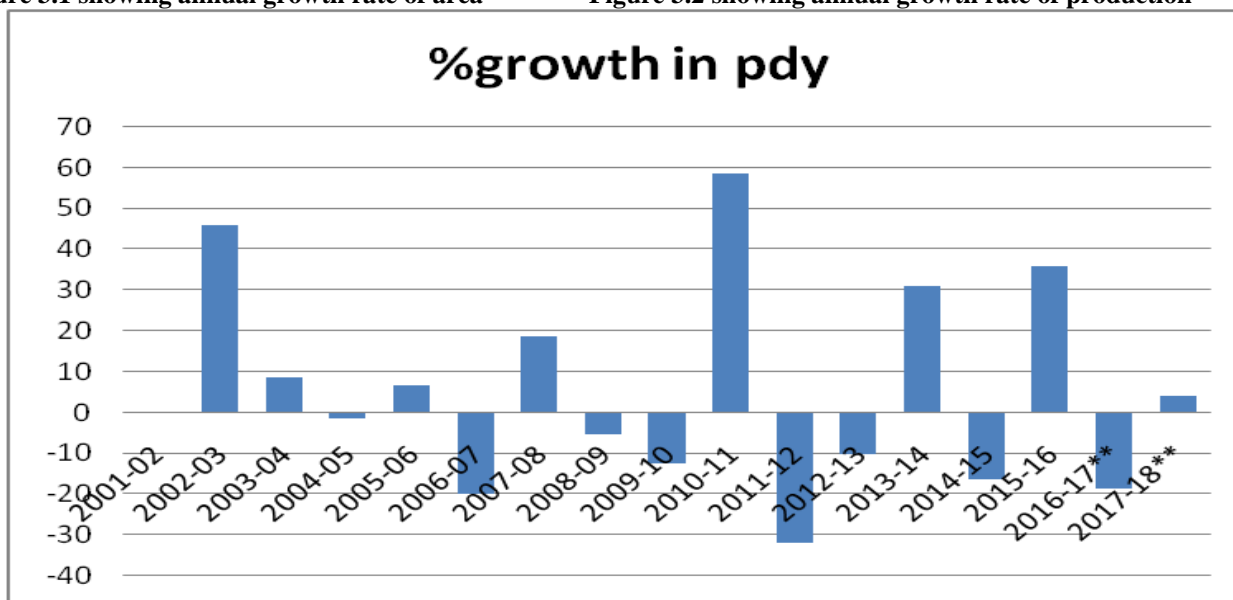


Figure 3.3 showing annual growth rate of productivity

Table 3: Percentage Share of Apple in Total Area of Fruits in India From 2001-02 To 2017-18. (Area in 000 Hectares)

Year	Percentage Share of Apple in Total Area of Fruits		
	Area	Total Area of Fruits	Percentage Share
2001-02	241.8	4127	5.85
2002-03	193.1	3905	4.94
2003-04	201.2	4767	4.22
2004-05	230.7	5155	4.47

2005-06	226.8	5454	4.15
2006-07	252.0	5686	4.43
2007-08	264.0	5989	4.40
2008-09	274.0	6237	4.39
2009-10	282.9	6474	4.36
2010-11	289.1	6383	4.52
2011-12	321.9	6705	4.80
2012-13	311.5	6982	4.46
2013-14	313.0	7216	4.33
2014-15	319.2	6235	5.11
2015-16	277.2	6301	4.39
2016-17**	305.0	6373	4.78
2017-18**	306.0	6514	4.69

Calculated By Author

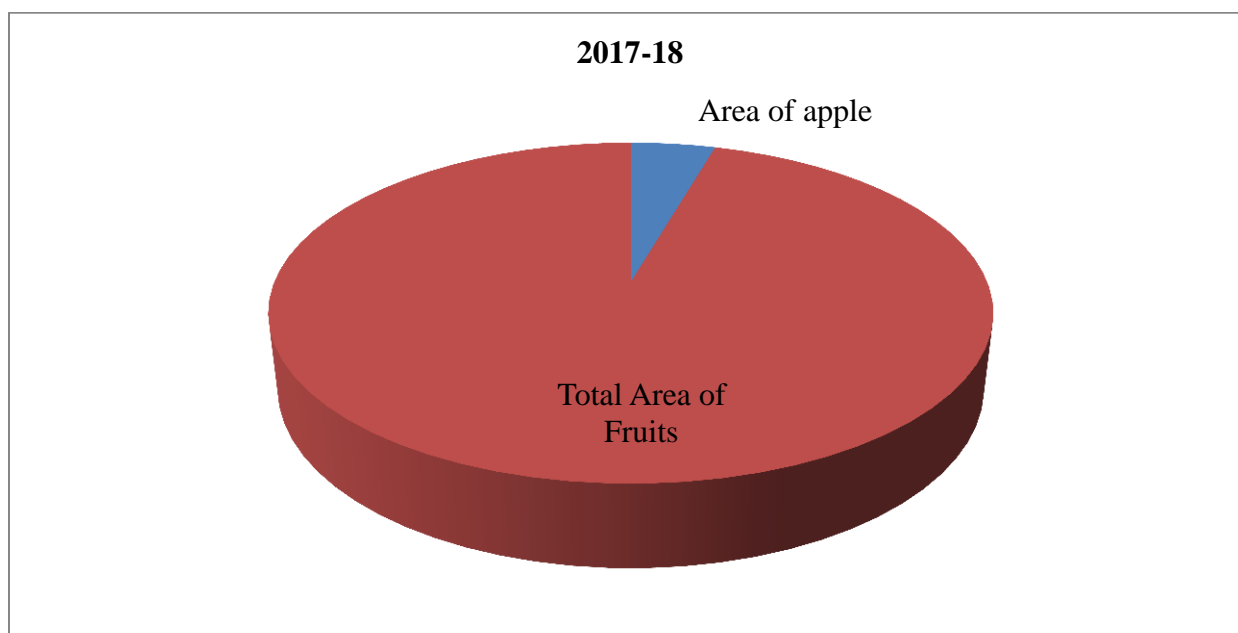


Figure 4: Percentage Share of Apple in Total Area of Fruits in India in 2017-18.

Table 4: Percentage Share of Apple in Total Production of Fruits in India From 2001-02 To 2017-18. (Production in 000 M T)

Year	Percentage Share of Apple in Total Production of Fruits		
	Production	Total Production of Fruits	Percentage Share
2001-02	1158.4	43115	2.68
2002-03	1348.4	45317	2.97
2003-04	1521.6	46063	3.30
2004-05	1739	50988	3.41

2005-06	1814	55505	3.26
2006-07	1624	59713	2.71
2007-08	2001	65764	3.04
2008-09	1985	68639	2.89
2009-10	1777.2	71709	2.47
2010-11	2891	74878	3.86
2011-12	2203.4	76428	2.88
2012-13	1915.5	81285	2.35
2013-14	2497.7	88977	2.80
2014-15	2133.8	89514	2.38
2015-16	2521.1	90183	2.79
2016-17**	2265	92918	2.43
2017-18**	2371	97055	2.44

Calculated By Author

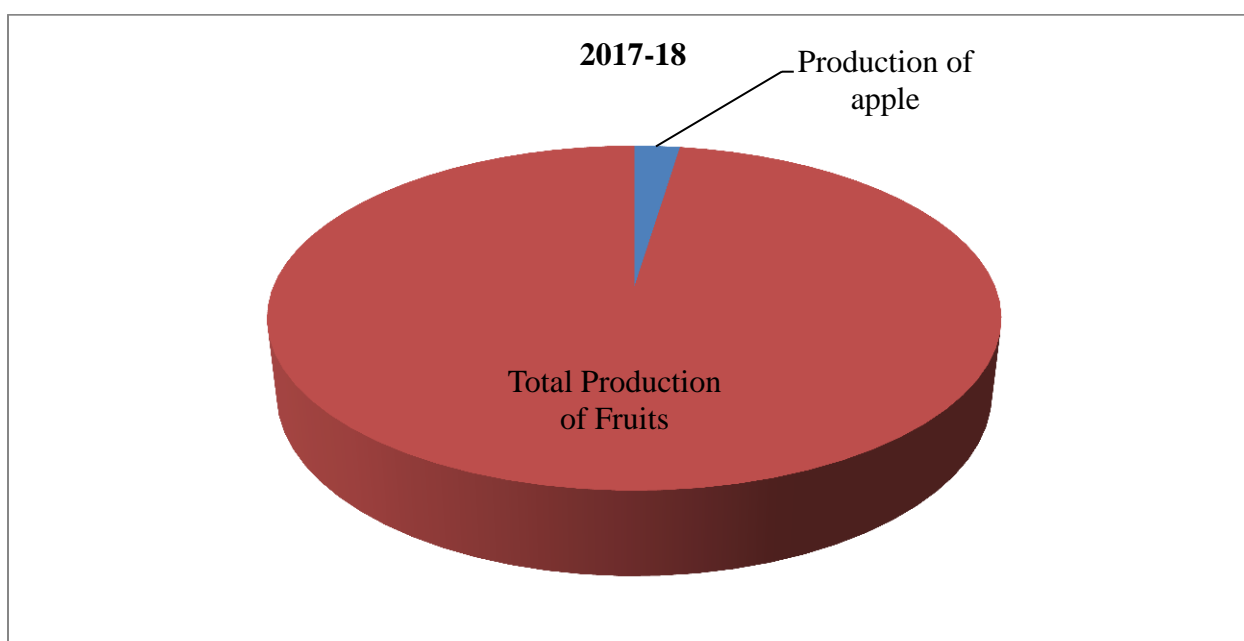


Figure 5: Percentage Share of Apple in Total Production of Fruits in India in 2017-18.

FINDINGS

The current study has been worked out within the framework of its chief objectives and it has found that:-

1. The area under apples has increased from 241.8 (000'HA) in 2001-02 to 306 (000'HA) in 2017-18.
2. The rising trends have been witnessed in the production and Productivity of apples in India during the study period.
3. Similarly there has been a rising trend in the area under apples in India except 2002-03 during the time period of the study.

4. Likewise, the production of the same has gone up from 1158.4 (000' MT) in 2001-02 to 2371 (000' MT) in 2017-18. The yield of apples from 2001-02 to 2017-18 has gone up from 4.8 (MT/HA) to 7.7 (MT/HA).
5. The productivity of apples in the country has shown a rising trend during the study period except in the years 2006-07, 2009-10, 2011-12, 2012-13 and 2014-15.

RECOMMENDATIONS

1. China is the leading producer of apple in the world. Whereas India ranks 6TH in apple production, but in case of productivity India is outlying behind. During 2013-14 the productivity of apple at world level was 15.48, where as it was only 6.14 in India, in china the productivity was 16.47. The government, should endow with economic incentives to the farmers to persuade them to cultivate apples not only for self consumption but for commercial purposes.
2. Imperfection in apple-marketing system should be changed with modern technologies and existing old system of selling should be discarded.
3. The government should grant easy loans, quality fertilizers and Insecticides / pest sides and establish apple cultivating and management training centers at various levels like district and block levels.
4. Producers should given the accurate information regarding demand and supply of different Mandies across India. So that they could decide where they should sent the Apple and sell at a suitable price.
5. The programmes like National Horticulture Mission (NHM), Postharvest Management (PHM), Technology Mission, must be build up further to help out the apple cultivators in the country to augment the production as well as productivity of apples and obtain financial profits on a wider scale.
6. The government should take the initiative to adopted the high density varieties of apples such as itllian varity ,balgarian variety M-11,M-12,M-14 etc to increase the level of productivity and economy of the rural population.

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