

# Production and Marketing of Apple in Himachal Pradesh: An Empirical Study

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**Abstract:** Horticulture is an old in India as the people of themselves. The area and production under horticulture in India are rapidly increasing. As the importance of horticulture crop is felt over the world, India is also gradually finding its place on the fruit map of the world. In fruits India is the largest producer of mangoes and bananas and is among the first ten in the production of apples, papayas, oranges and grapes. Horticulture sector is the main component for the development in the state of Himachal Pradesh. It provides job opportunities for more than one lakh masses directly or indirectly. Horticulture is improving the productivity of Land, generating employment, improving economic conditions of the farmers and entrepreneurs, enhancing exports and providing nutritional security to the people is widely acknowledged. The present study is focus on the marketing of apple and analyse the area and production of apple fruit in Himachal Pradesh.

**Key Words:** Horticulture, Apple, Fruit, Production, Marketing.

## 1. INTRODUCTION:

The importance of horticulture in improving the productivity of Land, generating employment, improving economic conditions of the farmers and entrepreneurs, enhancing exports and providing nutritional security to the people is widely acknowledged. Horticulture sector, which includes fruits, vegetables, species, floriculture and coconut among others, covered 159.7 million hectares of land 2013-14, accounting for 8.5 percent of the gross cropped area of the country, with production of 283.36 million tonnes and contributed 30 percent of GDP from agriculture (H.R. Singh 2013). Trends in favour of diversification of horticulture as well as increase in proportion of such land in total cultivated land are sweeping across the country. Diversification in favour of horticulture crop is driven by hard economic factors characterised by high productivity of per unit area, much higher returns compared to agriculture return, higher potential for employment generation and exports, comparatively lower requirement of water and easily adaptable to adverse soil and water land situation (G.L.Koul). India with its wide range of soil and climate conditions is ideal for growing large varieties of fruits, both indigenous and the ones introduced from abroad. India today is the largest producer of fruits. The major states actively involved in fruit production are Maharashtra, Kerala, Himachal Pradesh, Jammu and Kashmir and Punjab. Horticulture includes cultivation of fruits, vegetables, mushroom, ornamental flowering, foliage trees and shrubs as well as flower gardening. Horticulture is an old in India as the people of themselves. The area and production under horticulture in India are rapidly increasing. As the importance of horticulture crop is felt over the world, India is also gradually finding its place on the fruit map of the world. In fruits India is the largest producer of mangoes and bananas and is among the first ten in the production of apples, papayas, oranges, grapes and pine apple (Meena and Yadav).

Marketing is basically the Process of movement of goods from produces to consumer at the desired time, place and form. The marketing process consequently involves both mental and physical aspects. In mental aspect, the seller must know what buyers wants, and buyers must know what is for sale and in physical aspect, that goods must be moved to the place where they are demanded by consumers. The marketing of Apple is a complex phenomenon. The marketing pattern of apple is different from other agriculture commodities. They are first brought to the wholesale markets near the production area and then supplied from there to the terminal markets. The dispersion process in case of apple is in the opposite direction. The produce is first sent to the terminal market from the producing area and then distributed to the primary and secondary markets. Consequently, a large number of middlemen are involved in the channels of trade between the apple producers and the consumers. The marketing system for apple is therefore, of utmost importance for those growers who specialise in apple production and of great importance to all those people who are concerned with the producer's share in the consumer's price. Apple marketing in the Himachal Pradesh is virtually in its entirety is carried out by the private sector comprising of pre-harvest contractor, forwarding agent, commission agents, wholesalers and retailers. It is claimed that complicity among middlemen and exploitation of weaker producers is common practice.

## 2. LITERATURE REVIEW:

Deodhar (2005), Stated there are wide variations in the Apple Price across the country and absence of integration can be attributed to traders, cascading effect of trader margin at various distribution points and absence of competition to agriculture produce marketing committee markets and inadequacy of road and cool chain infrastructure.

Ahmad and Rifat (2012), marketing efficiency is important for increasing production and fair returns to apple growers. They talked about three marketing channels and have concluded that marketing channel i.e., Growers to consumer is having less price spread and more returns to growers, but is in rare practice due to lack of marketing information, credit and institutional facilities, small holdings.

Lokesh and Hira.S (2014), in his research paper entitled, Horticulture development in Himachal Pradesh: An Empirical Analysis, the contribution of the horticulture within primary sector has risen from 18.53 per cent in 2000-01 to 26.98 per cent in 2009-10. In terms of contribution to GSDP and NSDP, horticulture sector demonstrates a phenomenal place during the span of ten years. Not with standing, the phenomenal contribution of the horticulture sector to the State economy. Therefore, high priority should be given to horticulture sector, which has emerged as a major sector in the development of economy of the State.

Gourab Bera (2015), in his research, An Assessment of Apple cultivation in Kalpa (Kinnaur District) Himachal Pradesh, Apple cultivation has found to be the most important horticultural farming in Himachal Pradesh (Kinnaur). It has got great future prospects in terms of export. It does influence in the socioeconomic life of the inhabitants of Kalpa. The growing importance of the Apple Industry is bringing about a revolutionary change in the state.

Parrey and Hakim (2015), States that apple grower have strong incentive to apple sale information, investigating price and demand changes by using all the available information sources. However, low availability of market information and high cost on analysis and recognition of getting signals cause such problems, including convergence of information sources, limitation in the local market, and low reliability of information.

### **3. OBJECTIVES OF THE STUDY:**

- To study the marketing of apple fruit in Himachal Pradesh
- To study the requirement of Apple Fruit Cultivation
- To Analyse the State GDP, Area and Production of Horticultural Products in Himachal Pradesh

### **4. CULTIVATION AND PRODUCTION OF APPLE FRUIT:**

Apple is one of most commercially grown table and temperature fruit crop in the world after banana, orange and grapes. China tops apple fruit production in the world apple has excellent health benefits, hence it is recommended for daily consumption. Apple were originated in Europe and western Asia and spread all over the world. Apple tree belongs to family of "*Rosaceace*" and genus of "*Malus*". There are more than 8000 varieties/cultivators of apple all over the world. The apple is a deciduous tree which can grow up to 15 to 16 feet tall. However the size and shape of apple tree are determined by root stock selection and trimming (pruning) method. Soil, climate and orchard management practices are common factor that influence the commercial farming of apple fruit. Apple can eaten raw or used as an important ingredient in many desserts like apple pie, maple crumble, apple crisp and apple ca apart from using in beverages ( ciders and juices).

Climate (temperature and sunshine) is the main factor that effects development of apple fruits. Usually, apple trees require certain minimum chilling period for optimum growth and quality fruiting. It is recommend having 1000 chilling hours at below 7<sup>0</sup>C for best growth and yield. These conditions depend upon the cultivators. However extreme cold temperature will damage the apple crop. Apple can be cultivated at 1500 to 2600 meter above mean sea level (msl). Apple orchard requires on an average 20<sup>0</sup>C to 25<sup>0</sup>C during growing period along with 100 to 130 cm evenly distributed annual rain fall. Heavy rain fall or fog during fruit maturity will result in improper apple fruit development. Avoid growing apples in areas where heavy winds are expected. Apples can be grown in most of the soils. However, the best suitable soil are well drained deep loamy soils rich in organic matter having pH value 5.5 to 6.5 with good aeration.

Apple Orchards start bearing fruits from 7<sup>th</sup> to 8<sup>th</sup> year. However, it all depends on the cultivator selected. Usually, the economic life of apple tree is more than 35 years. When it comes fruit yield, fruit yield increases from 8<sup>th</sup> to 18<sup>th</sup> year and thereafter remains stable for 30 to 35 years. Some varieties even produce apple after 35 years based on agro climatic conditions and variety chosen. Make sure to pick the fruits before they are fully ripe.

### **5. DISCUSSION AND FINDING OF THE STUDY:**

#### **5.1. Apple Marketing in Himachal Pradesh**

The marketing of horticultural crops is a complex process. It consists of all those functions and processes involved in the movement of the product from the place of production to that of consumption. The marketing activities involve not only the functions of buying and selling but also the preparation of produce for marketing, assembling,

packing, transportation, grading, storage, processing, retailing etc. The number of functions and its type vary from product to product, from time to time and from place to place. Himachal Pradesh Agricultural/ Horticulture Produce Marketing Act, 2005 has been enforced (implemented). Under the Act, Himachal Pradesh Marketing Board has been established at the State level. The whole of H.P. has been divided into ten notified market areas. Its main objective is to safeguard the interest of the farming community. The regulated markets established in different parts of the state are providing useful services to the farmers. A modernised market complex at Solan is functional for marketing of agricultural produce, besides construction of market yards in different area. At present 10 market committees are functioning and 52 markets have been made functional. During the year 2015-16 the procurement price of Apple, Mango and Citrus fruits have been remained the same under Market Intervention scheme as it was in the previous year and 36.033 MT, C grade Apple fruit valued to ` 23.42 crore has been procured under this scheme. No fruit was procured under Mango Market Intervention Scheme and the Citrus Market Intervention Scheme is in operation till 13.02.2016. Himachal Pradesh Horticultural Marketing and Processing Corporation Limited (H.P.M.C) a State public undertaking was established in the Himachal Pradesh with the objective of marketing fresh fruits and vegetables, processing the unmarketable surplus and marketing the processed products. Since its inception, H.P.M.C. has been playing pivotal role in the life of fruit growers of the state by providing them remunerative returns of their produce. During the year 2011-12 up to 31st December, 2011 HPMC has sold about ` 1,188.73 lakh processed products in the domestic market. Under Market Intervention Scheme (MIS), HPMC has procured about 3,745.86 MT of apples and about 339.00 MT of apple juice concentrate have been produced. It provides quality packing material to the growers and to adhere standards of apples for different grades, Notification in this regard was issued by the State Government dated 4.04.2015 by specifying maximum weight allowed 24.00 Kgs. and 12.00 Kgs for Standard (Full Box) and Standard (Half Box), respectively.

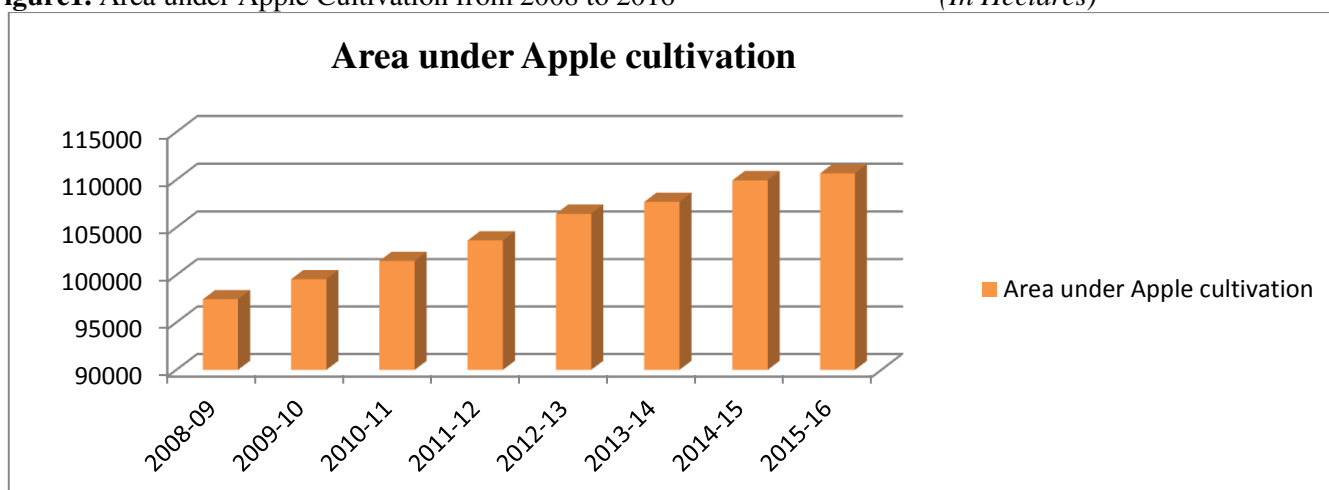
### 5.2. Apple cultivation in Himachal Pradesh

**Table1.** Area under Apple Cultivation in Himachal Pradesh (In Hectares)

S. No	Date	Area under Apple cultivation	Growth in percentage
1	2008-09	97438	00.00
2	2009-10	99564	2.13
3	2010-11	101485	1.89
4	2011-12	103644	2.08
5	2012-13	106440	2.63
6	2013-14	107686	1.16
7	2014-15	109953	2.06
8	2015-16	110679	0.66

Source: Economics and Statistics Department, Himachal Pradesh

**Figure1.** Area under Apple Cultivation from 2008 to 2016 (In Hectares)



Source: Economics and Statistics Department, Himachal Pradesh

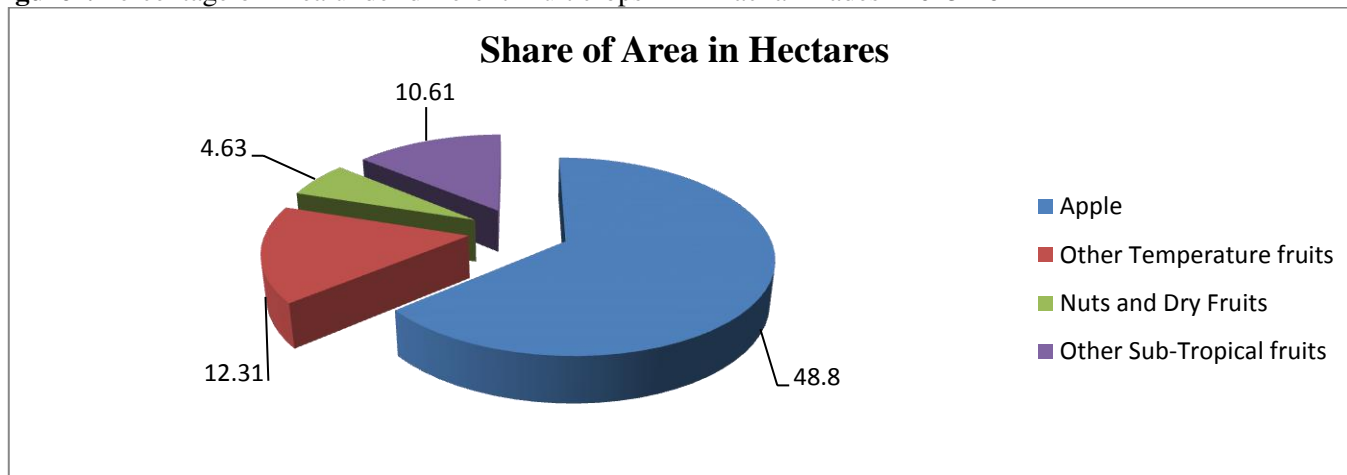
**Table2.** Area under different Fruit Cultivation 2015-2016 (In Hectares)

S. No	Crop	Area in Hectares	Share in % Hectares
1	Apple	110679	48.80
2	Other Temperature fruits	27908	12.31
3	Nuts and Dry Fruits	10491	4.63

4	Other Sub-Tropical fruits	24063	10.61
5	<b>Total Area under Horticulture</b>	<b>226799</b>	<b>100</b>

Source: Economic Survey of Himachal Pradesh

Figure2. Percentage of Area under different Fruit crops in Himachal Pradesh 2015-16



Source: Economic Survey of Himachal Pradesh

The area under Apple fruit cultivation has increased from 97438 hectares in 2008-09 to 110679 hectares in 2015-16. Nuts and dry fruits exhibit area increase from 231 hectares in 1960-61 to 10491 hectares in 2015-16, Citrus and other sub tropical fruits have increased from 1,225 hectares and 623 hectares in 1960-61 to 24063 hectares and 53658 hectares in 2015-16, respectively. The area of apple fruit cultivation is continuously growing in the state of Himachal Pradesh with the average growth of 1.5 percent every year.

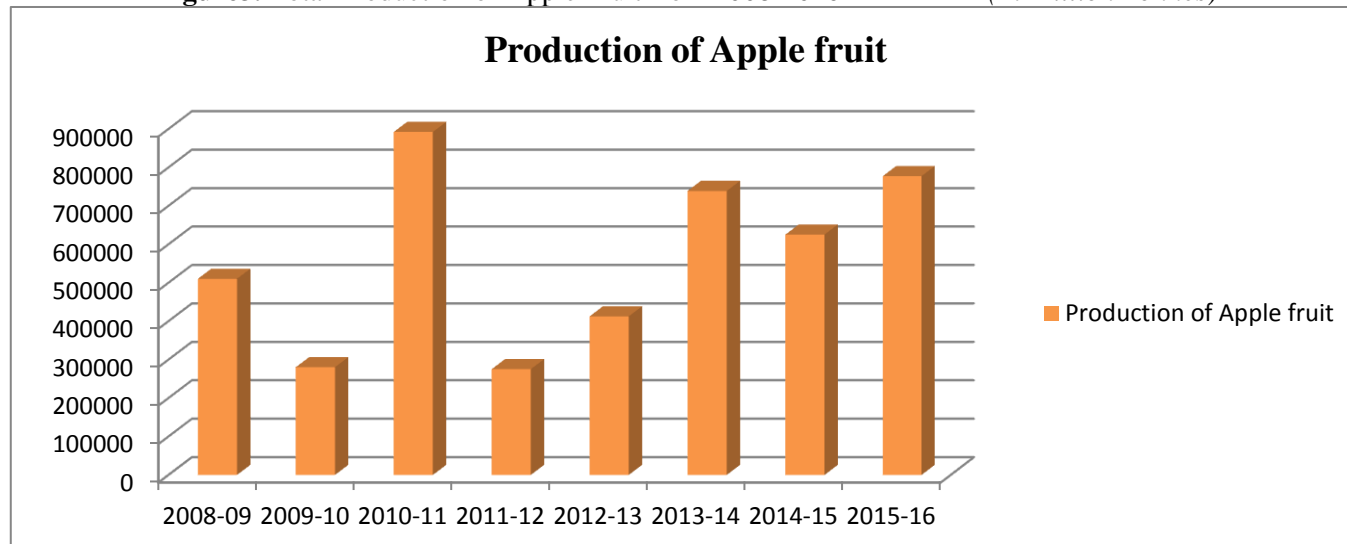
### 5.3 Growth in Production of apple fruit in Himachal Pradesh

Table3. Production of Apple Fruit in Himachal Pradesh (In Million Tonnes)

S. no	Dated	Total production	Growth rate in percentage
1	2008-09	510161	00.00
2	2009-10	280105	-82.13
3	2010-11	892112	68.61
4	2011-12	275036	-224.36
5	2012-13	412395	33.31
6	2013-14	738723	44.17
7	2014-15	625199	-18.16
8	2015-16	777126	19.55

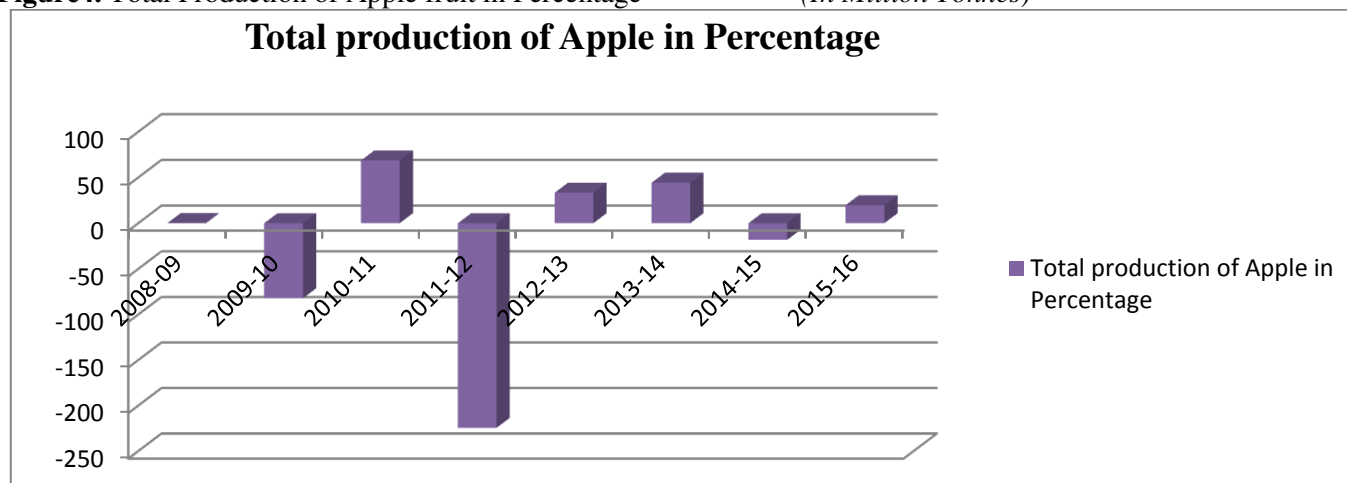
Source: Economics and Statistics Department, Himachal Pradesh

Figure3. Total Production of Apple Fruit from 2008-2016 (In Million Tonnes)



Source: Economics and Statistics Department, Himachal Pradesh

**Figure4.** Total Production of Apple fruit in Percentage (In Million Tonnes)



Source: Economics and Statistics Department, Himachal Pradesh

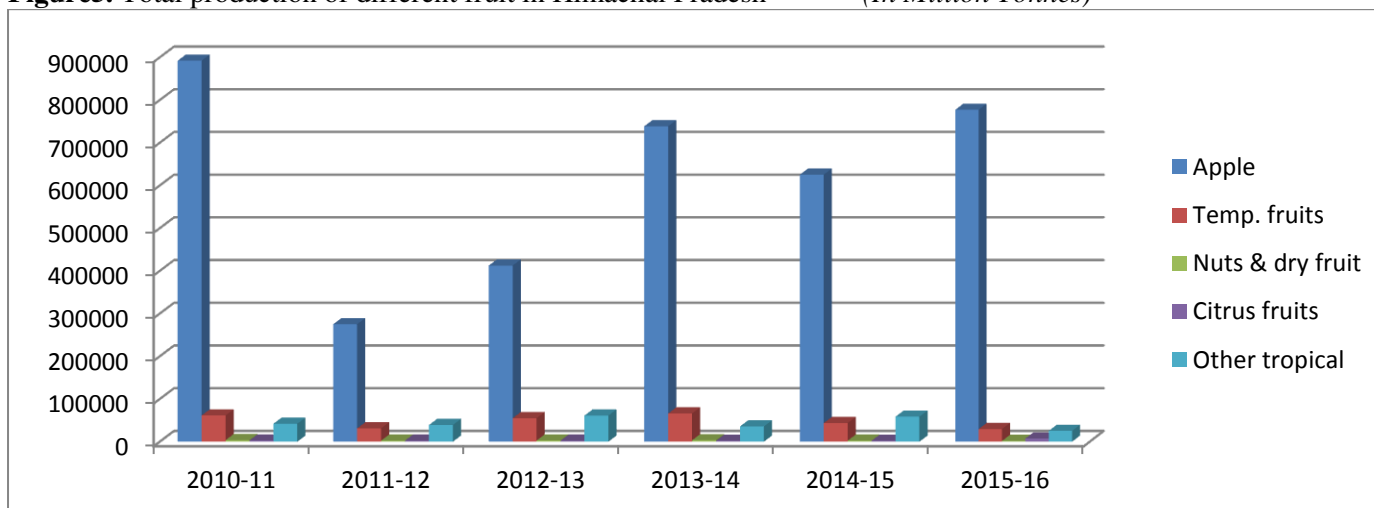
Total production of apple fruit has been increased 510161 (MT) during 2008-09 to 777126 (MT) in 2015-16. The production of apple fruit from 2008 to 2016 has increased 34.35 percent during the years. Himachal Pradesh has results in shifting of land use pattern from agriculture to fruit crops in the past few decades. The area under fruit crops which was 792 hectares in 1950-51 with total production of 1200 tonnes increased to 226799 hectares during 2015-16. The total fruit production 2015-16 was 92889 (M.T). It was envisaged to bring 4000 hectares of area under fruit plants against which 4328 hectares of area under plantation. Apple is so for the most important fruit crop of Himachal Pradesh which constitutes 48 percent of total fruit crops and about 87 percent of the total fruit production. Area under apple has increased from 400 hectares in 1950-51 to 110679 hectares in 2015-16. And the total apple production was 777126 M.T in 2015-16.

**Table4.** Total Production of different Fruit in Himachal Pradesh (In Million Tonnes)

Item	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Apple	892112	275036	412395	738723	625199	777126
Temp. fruits	61381	31181	55021	66130	43613	29571
Nuts & dry fruit	3620	2493	2810	3482	2413	1842
Citrus fruits	2868	2503	2432	2227	2217	7331
Other tropical	42031	39082	61162	35732	58552	25321
<b>Total</b>	<b>1027821</b>	<b>372823</b>	<b>555708</b>	<b>866344</b>	<b>751938</b>	<b>928829</b>

Source: Economic Survey of Himachal Pradesh

**Figure5.** Total production of different fruit in Himachal Pradesh (In Million Tonnes)



Source: Economic Survey of Himachal Pradesh



Total production of apple fruit in Himachal Pradesh has increased from 892112 (MT) in 2010-11 to 777126 (MT) in 2015-16. In 2011-12 and 2014-15, apple production declined due to heavy rains and hail storms in apple orchards which effects its cultivation, after all apple production of Himachal Pradesh is growing rapidly. The pace of development is further jeopardized due to the dwindling apple production, owing to weather vagaries and market fluctuation and the production of apple during last few years have attracted the attention of the government. It is necessary to explore and harness the vast horticulture potential of the hill state through diversified horticulture production in varied agro-ecological zones. The production under temperature fruits other than apple production has increased from 61381 (MT) in 2010-11 to 29571 (MT) in 2015-16. Nuts and Dry fruits production has increased 3620 (MT) during 2010-11 to 1842 (MT) in 2015-16. Citrus fruit and other sub-tropical fruits has increased from 2868 (MT), 42031 (MT) during 2010-11 to 7331 (MT), 25321 (MT) in 2015-16 respectively.

#### 5.4. Status of Apple and Apple Cultivation

Apple farming is an important activity and profession of farmer communities in the Himalayan states of India. Apple (*Malus and Domestica*) accounts of the world's deciduous fruit tree production. The Leading apple growing country is china, producing about 41 % of the world's apple followed by the United States, Turkey and India (USDA, 2013). The trees of *Malus* family require a long period of dormancy, a well drained soil, years of careful pruning and pest management. The tree is believed to have originated from Asia, and now more than 7500 varieties of apple are available worldwide. These large numbers of varieties may be grouped in three categories, Cider, Cooking and Disserted (V.K, 1997).

Apple is the most favoured fruits of people and is a widely grown fruit in temperate regions of the globe, (N.K & Sharma R, 2002), (Agrahari P & D.S, 2003). The world production of apple is about 58 million tonnes from an area of about 5.26 million hectares (FAO, 2005). Presently, India is the 9<sup>th</sup> largest producer of apple in the world contributing one third (1/3) of total apple production of the world with an annual production of 1.42 million tonnes from an area of 0.25 million hectares (Anon, 2004). It is the 4<sup>th</sup> major fruit crop of India (GOI, 2004). Apple is reported to be the most important fruit crop of the North-western Indian Himalayan region, which comprises of the state of Himachal Pradesh, Jammu and Kashmir and Uttrakhand. These three states together account 99 percent of the total production. The remaining one percent production in India comes from the states of Arunachal Pradesh, Sikkim, Nagaland and Meghalaya (Chadha & Awasthi, 2005)

#### 6. HORTICULTURE CONTRIBUTION TOWARDS STATE GROSS DOMESTIC PRODUCT (SGDP):

Apple is a predominant fruit crop of Himachal Pradesh and in recent years it has emerged as the leading cash crop amongst fruit crops. Apple is the fourth major fruit crop of the country in terms of production after Mango, Citrus Fruit and banana. Apple is grown mainly in the state of Jammu and Kashmir, Himachal Pradesh, Uttrakhand and Arunachal Pradesh. Himachal Pradesh is the second largest producer of apple in India, After the Jammu and Kashmir. Himachal Pradesh is known for the production of quality apples.

Gross Domestic Product (GDP) is the money value of the sum of total goods and services produced in the country. Agriculture is the main occupation of the people of Himachal Pradesh and has an important place in the economy of the state. Himachal Pradesh is only state in the country whose 89.96 percent of population (Census 2011) lives in rural areas. Therefore Agriculture/Horticulture is dominant as it provides direct employment to about 62 percent of total workers of the state. Agriculture happens to be the premier source of State Income (GSDP). About 10.4 percent of the total GSDP comes from the agriculture and its allied sectors. Out of the total GSDP geographical area of state is 55.67 Lakh Hectares, the area of operational holding is about 9.55 lakh hectares and is operated by 9.61 Lakh farmers. The average holding size is about 1.00 hectare. Distribution of land holdings according to 2010-11 Agricultural Census shows that 87.95 percent of the total holdings are of small and marginal. About 11.71 percent of holding are owned by Semi Medium and Medium farmers and only 0.34 percent by large farmers. The gross value of the fruit produce during 2015-16 was 4185.60 crores and per capita income from fruits during 2015-16 was 6104.48 crores.

#### 7. CONCLUSION:

It is concluded that the Agriculture is the mainstay of Indian Economy and Horticulture is a crucial component, there of Apple production is the main occupation in the Himachal Pradesh (India). Apple constitutes 48 percent of total fruit crops and about 87 percent of the total fruit production. About 10.4 percent of the total GSDP comes from the agriculture and its allied sectors. Out of the total GSDP geographical area of state is 55.67 Lakh Hectares, the area of operational holding is about 9.55 lakh hectares and is operated by 9.61 Lakh farmers. The average holding size is about 1.00 hectare. During the study it was found that area of apple fruit cultivation is continuously growing in the state of Himachal Pradesh with the average growth of 1.5 percent every year.

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