



## Horticulture Sector in Jammu and Kashmir Economy

RAOOF AHMAD LONE

Research Scholar

Centre for Studies in Economics and Planning

Central University of Gujarat

India

VINOD SEN

Assistant Professor

Centre for Studies in Economics and Planning

Central University of Gujarat

India

### Abstract:

*Horticulture has gained commercial tone in the recent years as an important component of agriculture, have very significant share in the economy of the country. India has the advantage of diverse agro-climatic conditions which enables it to produce a wide variety of horticultural crops round the year. The horticulture crops also provide better alternative for diversification of Indian agriculture via higher returns. It plays an important role in country's nutritional security as well, including poverty alleviation and employment generation. Jammu and Kashmir, northern most state of India have different topographical and environmental conditions, possesses comparative advantage in the production of various horticultural products. In some cases it enjoys monopoly in the production of (Saffron), Black Zeera and some fresh fruits and dry fruits (Delicious Apple, Almonds, etc). Economic growth, urbanization and globalization, etc. have fueled the higher demand for the horticulture commodities in the state which increases the economic benefits from horticulture sector along with export earnings and employment to the state. The paper has evaluated the production, area and productivity trends of major horticulture fruits in J&K. It had examined briefly linkages of horticulture sector*

*in the employment and income generation and export earnings. The paper is analytical and empirical in nature. Whole study is based on secondary data source and covers period of past one decade. Data is collected from Directorate of Horticulture Planning and marketing J&K, National Horticulture Database.*

**Key words:** Agriculture, Climatic-conditions, Export, Employment, Horticulture.

## **1: Introduction**

Agriculture plays an important part in the Indian economy as a major contributor of Gross Domestic Product and employment and livelihood generation. Over 68 percent of the rural households depend on agriculture as principal means of livelihood. Agriculture along with fisheries and forestry accounts for one-sixth of the nation's Gross Domestic Product (GDP). Agricultural exports constitute one fifth of the total exports of the country (GOI 2011).

Horticulture has gained commercial tone in the recent years as an important component of Agriculture, having very significant share in the economy of the country. India has the advantage of diverse agro-climatic conditions which enables it to produce a wide variety of horticultural crops round the year. The horticulture crops provide better alternative for diversification of Indian agriculture in view of higher return. It plays an important role in country's nutritional security as well, including poverty alleviation and employment generation.

The term horticulture is combination of two Latin words "Hortus" means garden or enclosure and "cultura" meaning cultivation or horticulture literally means garden or culture of garden crops. The term "agriculture" refers broadly to the technology of growing plants and rearing animals, where as "horticulture" as a part of agriculture is connected with growing so called garden crops. Horticulture can now be redefined as the

'Science of growing and management of fruits, vegetables including tubers, ornamental, medicinal and aromatic crops, spices, plantation crops their processing, value addition and marketing'. The department of Agriculture and Co-operation Ministry of Agriculture is the nodal department for over viewing horticulture development in the country. The division of horticulture was result of crop division in 1981 and position of horticulture commissioner was created in 1985. At national level three boards, National horticulture Board, Coconut development board and National Bee Board, besides two directorates were set up for the development of horticulture sector in the country (NHB 2006).

New introductions like mushroom, bamboo and bee keeping (for improving the crop productivity) further expanded the scope of horticulture. 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 and prominent 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 opportunities. The horticulture sector contributes around 28% of agricultural GDP from about 13.08% of the area and 37 % of the total exports of agricultural commodities (GOI, 2007).

Horticulture products-vegetables, fruits, species, and aromatic plants- have grown steadily to become the largest category of world agriculture trade, accounting for over 20% of trade in recent years (Okello Julius and English Philip 2004). Horticulture is realized to plays a vital role in providing food security globally. During the past few years, demand for high value and low volume horticulture crops has been showing much faster growth than demand for food grains (Naseer et. al. 2013).

The horticultural scenario of the country has been changing fast, both in terms of production and productivity.

India has emerged as a leading horticultural country of the world with a total annual production of 144.4 million tons of horticultural crops during 2002-03. The focused attention and high priority accorded to the development of horticulture in the country has led to increases in production and productivity and opened new avenues for export of fresh and processed horticulture products. India is now the second largest producer of fruits and vegetables in the world and is the leader in several horticultural crops, namely Mango, Banana, Papaya, Cashew nut, Areca nut, Potato and Okra (CSO, GOI 2011).

## **2: Jammu and Kashmir Scenario**

The Jammu And Kashmir State is basically an agrarian economy in nature. Vast majority of population, 75% lives in rural areas, mostly dependent on the agriculture sector. The state economy depends mostly on traditional forms of occupation. The state is affected by continued violence and insurgency since independence of India, and the economy is an underdeveloped one. Unaffected and unaltered by modern day industrial developments and changing regimes, the indigenous traditional occupations of farming, animal husbandry and horticulture forms the backbone of the economy. The State has meager industrial base, backward economic and social infrastructure, and fewer avenues available in private sector, all the features have made population mostly dependent on the primary sector for their livelihood security, employment and income generation. During the last few years diversification from agriculture towards high value commercial horticulture commodities i. e, fruits, vegetables and livestock products and some world famous spices like saffron are taking place at a faster pace and is reflected in the higher share of high value commodities in the agriculture production in almost all the districts of the state.

Jammu and Kashmir, northern most state of India have

different topographical and environmental conditions, possesses comparative advantage in the production of various horticultural products. In some cases it enjoys monopoly in the production of (Saffron), Black Zeera and some fresh fruits and dry fruits (Delicious Apple, Almonds). Jammu and Kashmir is famous in horticulture produce in India and also abroad, the environmental conditions offers a wide scope for cultivation of all types of horticulture crops grown in different tropical zones temperate fruits like Apple, Pear, Plum, Apricot, Medical and Aromatic plants, Mushroom all types of vegetables, besides these world famous spices like Saffron and Black Zeera are cultivated (Masoodi, 2003).

In the earlier five year plans horticulture was not given prime importance, recently horticulture is considered sub-sector showing remarkable progress in the state. Horticulture is gaining momentum by its contribution to Gross State Domestic Product (GSDP), 45% of agriculture is due to horticulture, and its contribution in GSDP is to be 7- 8 per cent. For the year 2008-09 an amount of Rs. 5796.49 lakh was projected to be spending on horticulture both under plan and non plan budget.

Horticulture in recent years has emerged as an important and viable option in agriculture and has transformed the subsistence level of forming into a high value commercial enterprise. Horticulture crops provide food and nutritional security, generate employment, maintain ecological balance and provide raw materials for agro-processing industries, thereby improving the economy of state. Economic growth, urbanization and globalization, increasing share of high value commodities in the consumption basket of the people have fueled the higher demand for the horticulture commodities in the state which increases the economic benefits from horticulture sector. The horticulture sector has also higher returns and labour absorption over the staple agriculture crops. Horticulture sector in the state of Jammu and Kashmir has a large share in export earnings and employment potential in the state. Horticulture

related activities in the state presents wide source of income and livelihood security to large number of people and with the help of multiple backward and forward linkages, horticulture augments the income and economic prospectus of huge chunk of population like spraycide, Fungicide and fertilizer dealers and sellers, transporters, small scale industrial workers (box preparation and processing). Horticulture sector provides security and self-employment opportunities for labour of informal sector like women labour working in grading, sorting and packaging and apple carrying; Streetwalkers' selling the pre-harvest dropped Apples are other examples.

### **3: Past Literature:**

**Weinberger Katinka and Lumpkin A. Thomas (2005)** have highlighted the growing importance and demand of horticulture fruits due to increasing income levels, changing life styles and urbanization and how the horticulture crops contribute the poverty alleviation and economic development via employment generation and income augmentation. The paper has presented an empirical base that how horticulture sector enabled rural poor to escape from poverty through production and exchange of non-staple crops by increasing employment, brings commercialization of rural sector.

**Newly P.D and N.L Trorow (2006)**, have inferred that sustainable horticulture means the agriculture system and practices which aim to maintain and enhance the health of natural resources base and concerns for the safe food and for environmental protection which includes protect native vegetables, use of scarce water resources, manage soil health through protection from degradation and manage the impact of pest and diseases through best farm practice management.

**Naseer, Parvez and Ajaz (2013)**, have stated that Horticulture products-vegetables, fruits, species, and aromatic plants- have grown steadily to become the largest category of

world agriculture trade. Horticulture has emerged to play a vital role in providing food security globally. During the past few years, demand for high value and low volume horticulture crops has been showing much faster growth than demand for food grains. The increasing share of high value commodities in the consumption basket of the households, higher income and urbanization, changing life styles, market integration and trade liberalization at global level has led to an increased domestic and international demand for horticulture products in India.

**Naseer, Parveez and Muzafar (2013)**, stated that due to the stagnant growth in agriculture sector and low commercial value of stable crops farmers have made their intentions clear about the shifting of the agriculture sector to horticulture production. Diversification towards horticulture has become a viable option to stabilize growth and increase farm income and enhance agriculture growth. The diversification towards horticulture for improving sustainability, profitability and productivity will help not only in improving farm income but will generate gainful employment. It is believed that horticulture sector can be promoted as a means of agro- diversification for second green revolution in India.

**Wani M.H, Baba S.H, Yousuf Shahid (2009)**, referred that horticulture is labour intensive in nature and requires net high labour ratio from the stage of planting to stage of marketing of production. The sector requires also lot of support from family members and enables them to earn income, also provides indirect employment in packaging, grading, sorting and processing activities especially in horticulture belts. Indian agriculture is a prelude to economic development and a prerequisite for poverty alleviation and overall economic development.

**Javid Ahmad Bhat, Ruhi Rifat (2012)**, in their research paper have discussed about the marketing efficiency of Kashmir apple. Marketing efficiency is important for increase

production and fair returns to apple growers. Marketing efficiency is measured in terms of price spread. Lesser price spread means more marketing efficiency and vice versa. They talked about three marketing channels and have concluded that marketing channel i.e., Grower to consumer is having less price spread and more returns to growers but is rare in practice due to lack of marketing information, credit and institutional facilities, small holdings.

#### **4: Research Gap:**

Agriculture is the mainstay of State economy. Jammu and Kashmir is basically agrarian economy in nature. Horticulture by its contribution to GSDP, employment, income, living standard of people has emerged a prominent sub- sector for overall economic growth of the state. Due to stagnant growth in agriculture, weak industrial base and backward private sector, there is need to strengthen the position of horticulture as the sector is best viable option for exploration. Post independence period witnessed a substantial progress in horticulture sector in respect of production, area, and exports but still needs special attention.

Horticulture sector in state is facing infrastructural, credit, marketing problems. There is wide research gap, less work has been done, and there are only a few research articles available. There has not sufficient research on the horticulture production, export and employment trend in the state of Jammu and Kashmir. Therefore in consideration of the status of horticulture industry in the state, the current paper will highlight certain issues regarding the Area, production and productivity trend of major horticultural crops in the state as per district wise with following objectives to be fulfilled.

## **5: Objectives and Methodology:**

The study has evaluated the production, area and productivity trends of major horticulture fruits in J&K., had find out exports of fresh and dry fruits from the state to outside markets and has examined briefly linkages of horticulture sector in the employment and income generation. The present study is analytical and empirical in nature, based on secondary data source. The data is collected and analysed for the time period of past one decade. Data is collected from Directorate of Horticulture Planning and marketing Jammu and Kashmir, National Horticulture Database, Directorate of Economics and Statistics J&K sources. Further various published research papers and reports of State and Central Govt. have been used to arrive at the aforesaid objectives of the study. Mostly tabular and graphical presentation in the form of percentage, charts etc has been used to highlight data pertaining to the said objectives.

## **6: Discussion and Result:**

Agriculture is considered as a strong option and fundamental instrument for spurring growth and sustainable development, poverty reduction and enhancing food security in developing countries like India. Although agriculture occupies a shrinking share of India's national economy, achieving rapid growth in agriculture sector remains a nationwide major policy concern. The contribution of agriculture to India's gross domestic product (GDP) fell from 40% in 1980/81 to 13.7% in 2012-13 (CSO, GOI 2012-13). However, more than 70% of India's population lives in rural areas, and three-fourths of them depend on agriculture and allied activities for their livelihoods. Furthermore, the agricultural sector is the main source of employment in India, comprising 52% of the country's labor force in 2011/2012 (Bhirthal & Digvijay 2012).

Between 1980/81 and 1995/96, the agricultural sector in India grew at a rate of 3.3% per year, and this growth had a significant impact on poverty reduction. However, despite the past growth, agriculture in India is now beset with many problems. Most importantly, agricultural growth decelerated to 2.1% between 1996/97 and 2002/03, and also the agricultural growth rate remained below than the target in 10<sup>th</sup> as well as 11<sup>th</sup> five year plans to about 2.4%. This is largely due to stagnancy in the productivity of all food grains since 1990s. The food grain segment grew at merely 0.6% during this time period. Given the high dependence of the poor on agriculture, the stagnation in this sector is currently threatening to stall poverty reduction in India (Birthal et.al 2007).

Horticulture is not only a means of employment but also forms integral part of food and nutritional security and important source of economic security, horticulture production contribute directly to national prosperity. Many horticultural products are exported to rest countries of the world and by exporting the produce our economy earn foreign exchange. India exports flowers to America, Netherland, Germany, UK, vegetables to Sri Lanka, fresh Grapes and fresh fruits to Bangladesh, Saudi Arabia. Shifting towards horticulture production, both by small and marginal farmer's act as a mean to prosperity in many regions of country like Maharashtra, Himachal Pradesh, Kerala, Jammu and Kashmir etc. Horticulture sector is the consumer for many auxiliary industries like fertilizer, pesticide, fungicide industries, canning industries and processing industries. One hectare of fruit production generates 860 man days per annum (GOI 2005). So far Indian horticulture was insulated from outside world .Time bound removal of quantitative restrictions and other initiatives under WTO of which India is signatory, Indian horticulture became more competitive both in domestic and export market. This would generally modify crop varieties; micro propagation integrated and water management ensuring nutritional and

aesthetic security of population of 121.20 million. Major challenge for our horticulture sector with shrinking agriculture activity, the sensible option before nation is to increase further the production per unit area, intensive cultivation in high-tech protected environment with high-tech production inputs.

Over the years, horticulture has emerged as one of the potential agricultural enterprise in accelerating the growth of economy. It offers not only a wide range of options to the farmers for crop diversification, but also provides ample scope for sustaining large number of Agro industries which generate huge employment opportunities. At present, horticulture is contributing 24.5% of GDP from 8% land area. India has now emerged as the world's largest producer of coconut and tea and the second largest producer and exporter of tea, coffee, cashew, spices exports of fresh and processed fruits, vegetables, cut flowers, and dried flowers have also been picking up (GOI, 2001).

### **6.1: Production of Major Horticulture Fruits in Jammu and Kashmir**

Jammu and Kashmir is basically agriculture in nature, 75% people depend on agriculture and 60% of states revenue is contributed by the primary sector (State Agriculture Department). In the State, there is little scope for agriculture development and increase in productivity because of hilly terrain and fragmented and marginal holdings. The peculiar geographical situation, hilly terrain even of agricultural lands and lack of infrastructural facilities in Jammu and Kashmir has resulted in stagnant agriculture development. The production and productivity is not increasing in the same way as the input costs applied in production of crops. The agriculture is viewed as uneconomic activity and lot of disguised unemployment prevails. Horticulture sector has acted as viable option because of comparative advantage enjoyed by the State in the production of certain world famous horticulture

products due to climate and land suitability. Thus horticulture sector acts as an accelerative mechanism for overall economic growth and upliftment of rural poor by raising their living standard through their income levels.

Horticulture occupies an importance place in farming system. The initial land use pattern was mostly field crop cultivation, over the period of time due to better prospectus and wide scope for production of cash crops it has changed to agri-horticultural. Horticulture sector emerged as dominant industry in the state economy. Out of total area of horticulture in the State 90% is occupied by the valley Kashmir due to its suitable climate with annual turnover of \$75 million. State have different agro-climatic and topographical advantages, famous for horticulture production in India and also abroad, the environmental conditions offers a wide scope for cultivation of all types of horticulture crops grown in different tropical zones temperate fruits like Apple, Pear, Plum, Apricot, Medical and Aromatic Plants, Mushroom and all types of vegetables, besides these world famous spices like Saffron and Black Zeera are cultivated. Horticulture industry is considered to sub-sector showing remarkable progress in the state. Horticulture is gaining momentum by its growing contribution to agriculture and GSDP. Fruit production has increased to 11.05 metric tons during 1990-2000 from mere 16,000 metric tons in 1953-54 fresh fruit increased to 10.22 lakh metric tons; the area under fruit cultivation has increased by 17 times increased to 2.19 lakh hectare in 2000-2001. Per hectare yield has also increased to 5.08 metric tons from 1.29 metric tons (J&K Horticulture Department).

Apple production is major cultivation in the state. From past one and half decade production and area under apple cultivation has substantially increased due to high value of apple production. Production has increased from 1151.7 thousand M.T to 1373 thousand M.T and also the share of State in the national production of apple has increased from 63.5% to

77.2% in 2010 (National Horticulture Board, 2011). Saffron is world famous high valued low volume industrial/medical product, has great exporting value in the State. Presently Iran with production of 70% of the world Saffron ranked at first and India with production of 7.0% (J&K'S Monopoly), ranked as a third largest producer of Saffron. State has monopoly in the production of walnut, 90% of national share is produced in the state. According to State Horticulture Department about 6 lakh families are involved in horticulture industry and around 30 lakh persons get employment directly or indirectly from fruit industry of state. In Tropical region of Jammu fruits like Mango, Peach and Litchi and cold arid zone of Ladakh there is only one cropping pattern buckwheat, turnips and recently Strawberry cultivation were adopted in Ladakh. The region is famous for spice of Black Zeera. Certain Aromatic and medical plants are also produced in the state. World high quality and high priced saffron is produced in Jammu and Kashmir. Fruits like Apple, Walnut, and Almond get rank first, second and third respectively in area and production holding (64.05%), (27.3%) and (8.65%) area (Digest of statistics, J&K 1999-2000). So it has become sub-sector and promising part of agriculture and important for overall growth and raising living standard.

From the last few years' area and production under the cultivation of horticulture fruits has increased manifold and results in huge amounts of dispatches from the state. There were favourable trends in overall growth of horticulture sector because of 45% of GDP from agriculture is contributed by horticulture sector and various policy measures from centre and state government to boost horticulture sector due to labour absorbing nature of this sector which provides employment to large chunk of population.

**Table 1.1: Area and Production of Horticulture fruits (Dry and Fresh)**

Year	Area (Thousand Hectares)			Production (Lakh Metric Tons)		
	Fresh	Dry	Total	Fresh	Dry	Total
<b>2000-01</b>	140.8	78.2	219.0	8.37	0.95	9.32
<b>2001-02</b>	146.3	81.7	228.0	10.01	0.96	10.96
<b>2002-03</b>	148.5	83.2	231.7	10.46	1.01	11.47
<b>2003-04</b>	157.5	85.0	242.5	11.66	1.08	12.74
<b>2004-05</b>	167.6	90.7	258.3	12.17	1.14	13.31
<b>2005-06</b>	174.2	93.1	267.4	12.96	1.22	14.18
<b>2006-07</b>	123.6	66.0	189.6	12.65	1.07	13.72
<b>2007-08</b>	196.1	99.0	295.1	14.78	1.58	16.36
<b>2008-09</b>	203.3	102.3	305.6	15.31	1.6	16.91
<b>2009-10</b>	209.7	105.4	315.1	15.35	1.77	17.12
<b>2010-11</b>	217.1	108.0	325.1	20.46	1.8	22.22

Source: Directorate of Horticulture Government of J&K (Various Years)

As the table 1.1 presents that area under fresh and dry fruits both are increasing. The favourable trend of area and production increment is the result of both central and state government efforts and policies for example at central level National Horticulture Board set up, National Horticulture Mission, market intervention scheme, central horticulture institute at Srinagar, storage and pack houses, supply of fruit plants from government nurseries which induce people to shift land acreage towards horticulture production. Furthermore in economic terms, it is high remunerative prices, profitable nature of fruits and productive employment generation for farmers in there fruit orchards which prompt the farmers to shift and increase area under fruit cultivation and the result was production increment.

## **6.2: District Wise Production of Fresh and Dry Fruits**

In the state of Jammu and Kashmir different areas and regions have dominance of some specific horticulture fruits because of comparative advantages of different districts in a specific fruit which is the result of varying topography, soil fertility, soil matter, different environmental and geographical conditions which results in diversification of horticulture fruits among

different regions and districts. District wise production of fresh fruits and dry fruits is as below from time period of 2010-2011.

**Table 1.2: District wise production of fresh and dry fruits for year 2010-11 (Prod. in M.T)**

Districts	Fresh fruit			Dry fruit	
	Apple	Pear	Mango	Walnut	Almond
Srinagar	27886	2380	0	2625	89
Ganderbal	46733	2799	0	13153	21
Budgam	85460	8075	0	20280	767
Baramullah	659965	2015	0	15600	3
Bandipora	72504	546	0	4434	25
Kupwara	211054	7737	0	25200	0
Anantnag	126264	8170	0	41021	944
Kulgam	143795	4420	0	21319	21
Shopian	235129	2391	0	9850	13
Pulwama	112854	3268	0	18927	1842
Leh	5308	9	0	131	1
Kargil	1430	4	0	11	0
Jammu	0	2	3613	0	0
Samba	0	1	1239	0	0
Kathua	1029	2190	2252	5210	3
Udhampur	1068	1108	717	1443	2
Reasi	641	328	121	6384	2
Doda	5274	2290	0	7942	5
Kashtiwar	3037	132	0	5950	2
Ramban	4856	1780	0	7276	1
Rajouri	396	2395	156	3954	0
Poonch	2544	6171	0	13886	0

Source: Directorate of horticulture, Jammu and Kashmir (2011)

Table1.2 depicts production of important dry and fresh fruits for the year 2010-11 in the J&K State. Apple is the most important fresh fruit in horticulture industry of Jammu and Kashmir. Walnut and Almond are prominent dry fruits produced in the state. In the production of apple; Baramullah, Shopian and Kupwara stands at first, second and third respectively producing 659965 Mts, 235129 Mts and 211054 Mts. In the production of Walnut; Anantnag, Kupwara, and Kulgam stands first, second and third respectively with the production of 41021 Mts, 25200 Mts, and 21319 Mts

respectively and in Almond Pulwama, Anantnag and Budgam with the production of 1842, 944 and 767 Mts respectively enjoy position first, second and third. While as District Jammu and Sambha does not produce any Apple and Walnut. Among tropical fruits (Mango), Jammu, Kathua and Samba with production of 3613 Mts, 2252 Mts and 1239 metric tons stand first, second and third respectively. While as all districts in Kashmir Division cannot produce Mango. So the Jammu and Kashmir state with different agro climatic zones tropical, temperate etc. enjoy wider scope in horticulture sector, but efficiency should be maintained in the zonalisation and production of fruits based on comparative advantage.

### **6.3: Area, Production and Productivity of Major Fruits of Horticulture Sector in the State**

The production and export of horticulture sector in Jammu and Kashmir is mainly dependent on major world famous fruits like Apple, spice (Saffron) among dry fruits Almond, Walnut. The state produces 90% of Walnut production of nation, 77.05% of Apple production and 7.0% of world production of high quality and low volume spice of Saffron and places India at third ranking in saffron cultivation. Ladakh region is also famous for production of Black Zeera. But from last few years there has been diversification and changing trend in production, area and export of above main horticulture fruits in the state. Saffron cultivation in the state is at a declining trend, area and production both is decreasing due to labour absorbing and high costs of production and adulteration of low grade quality results in low price and returns. Trend pattern of major horticulture fruits are shown by table 1.3.

From the table 1.3, it can be clearly assessed that area and production under these major products has increased. The obvious reason behind the area growth is the high value of these fruits in the domestic market as well as export market. Again whatever is produced is sent to market. Besides these,

farmers realize the inherent capacity of the farm soils and adopt the cropping pattern suitable to soil taxonomy. Example may be taken from mass diversification of farmers in District Shopian towards fruit cultivation due to hilly nature of soil and land area where rice cannot be cultivated properly and the hilly regions of Kulgam district adopt the same technique because such areas are better suited for fruit production (Apple). Use of chemical fertilizers at huge scale and concentrated effort from State Govt. and Central Govt. has made it possible to increase the production of overall horticulture products in the country and same was the case with the State of J&K.

**Table 1.3: Production and Area under Major Horticulture Crops in J&K.**

(Production in MTs, Area in Hectares)

Year	Apple		Almond		Walnut	
	Area	Production	Area	Production	Area	Production
2000-01	88149	751310	18059	10901	59900	83399
2001-02	90080	909583	17247	9879	61782	86263
2002-03	94874	953946	16526	10621	66340	90032
2003-04	100702	1041538	15379	13263	69182	94579
2004-05	107925	1093275	15433	13473	74894	100596
2005-06	111881	1151712	15549	14327	77226	109167
2006-07	119041	1222176	16374	15192	81393	114926
2007-08	127795	1311845	16405	11261	82045	146781
2008-09	133102	1332812	17282	12043	84558	147642
2009-10	138191	1372973	17540	12515	87279.7	165024
2010-11	141717	1852412	NA	NA	89788	163745

Source: Directorate of Horticulture J&K (Various Years)

#### **6.4: Saffron cultivation in Kashmir valley**

State of Jammu and Kashmir is famous for the cultivation of world famous spices like Black Zeera in Ladakh region and Saffron in the Kashmir region, Pampore Tehsil of District Pulwama is dominant in Saffron cultivation in the state where 3200 hectares of land are under the saffron cultivation. Almost 7.5% of world saffron is produced in the state which is overall national production because the state has monopoly in the cultivation of saffron in the country and puts India at third

rank in the world saffron production. The production and area trends in saffron cultivation are shown in table 1.4.

**Table 1.4: Trends in production and productivity of Saffron in J& K**

Year	Area (in Hect.) (Growth %)	Production (Mts)	Yield rate (Kgs/hect.)
1996-97	5707 ( <b>0%</b> )	15.95	2.80
1997-98	4161 (-27%)	12.88	3.13
1998-99	2880 ( <b>-30.79%</b> )	7.65	2.27
1999-00	2742 ( <b>-4.79%</b> )	3.59	1.88
2000-01	3075 ( <b>12.14%</b> )	0.3	1.57
2001-02	2989 ( <b>-2.80%</b> )	6.5	2.96
2002-03	2928 ( <b>-2.04%</b> )	5.15	1.66
2003-04	2436 ( <b>-10.80%</b> )	6.86	3.75
2004-05	3110 ( <b>27.67</b> )	7.04	1.63
2005-06	3130 ( <b>0.64</b> )	6.5	2.25
2006-07	3010 ( <b>-3.83%</b> )	8.2	2.15
2007-08	3000 ( <b>-0.33%</b> )	7.7	2.5
2008-09	3280 ( <b>9.33%</b> )	9.46	2.34
2009-10	3785 ( <b>15.40%</b> )	9.55	2.5
2010-11	3790 ( <b>16.04%</b> )	9.85	2.52

Source: Financial commissioner Revenue, J&K (Various Years)

The table 1.4 shows that area, production and productivity of the precious and high value horticulture fruit Saffron in the State has decreasing since 1996-97. Area has declined from 5700 hectares in 1996-97 to 3000 hectares in 2007-08 and productivity decline from 3.72 kg/hectare in 2003-04 to 12.52 kg/hectare in 2011-12. The growth rate is quite fluctuating due to the reasons of inadequate irrigation facility and natural elements plays a greater role in the overall production. The matter of concern is that why the area under the high commercial spice (Saffron) is going on declining? This is due to the severe constraints and problem faced in the Saffron cultivation, farmers has withdrawn from Saffron cultivation. Existence of some serious problems related to disease to corm seeds, lack of irrigation facilities, lack of proper soil testing, unavailability of sufficient marketing facilities in the sector,

adulteration in quality saffron which degrades the quality of Kashmiri Saffron. Existence of commission agents, exploit the farmers to get the remunerative prices from the production and they get discouraged. Government (GOI) realizing the importance of this famous spice and conditions prevalent has initiated National Mission on Saffron with the total outlay of 288 crores for the revival and rejuvenation of the saffron industry in the state to strength marketing, irrigation and quality control of the Saffron cultivation in the state to promote this sector.

**Table 1.5: District wise production of saffron**

S. No	District	Area(hectare)
01	Pulwama	3200
02	Budgam	300
03	Srinagar	165
04	Kishtwar	120
Total		3785

Source: Agriculture department J&K

## **6.5: Export of Major Fruits and Foreign Exchange Earned**

Jammu and Kashmir is promoting exports from the state to the rest of the state and to other countries as well. States fruit (dry and fresh) goes to the other countries and in turn earns substantial foreign exchange the export of the dry fruits viz, Almond and Walnut during the year 2007-08 was 6889.11 Mts comprising of 197.11 Mts of Almond, 6692 Mts of Walnuts. The foreign exchange earnings were Rs. 115.95 Crore during 2005-06 and Rs 161.44 Crores during 2007-08 (Digest of Statistics, J&K 2007-08).

**Table 1.6: Export of fruits (Dry + Fresh) from the State**

Year	Export (Lakh Metric Tons)		
	Fresh	Dry	Total
2000-01	5.01	0.16	5.17
2001-02	6.47	0.16	6.63

2002-03	7.05	0.15	7.2
2003-04	7.62	0.13	7.75
2004-05	8.2	0.14	8.34
2005-06	7.6	0.09	7.69
2006-07	6.78	0.14	6.92
2007-08	7.33	0.19	7.52
2008-09	11.01	0.16	11.17
2009-10	9.34	0.23	9.57
2010-11	10.87	0.25	11.12

Source: Directorate of Horticulture (P&M) J&K and Digest of Statistics (2007-2008)

Table 1.6 shows that total exports from the state increased over the past decade. The volume of exports increased from 5.17 lakh Mts in 2000-01 to 11.12 lakh Mts in 2010-11 means more than double increment. The exports of fresh fruits increased from 5.01 lakh Mts in 2000-01 to 10.87 lakh Mts in 2010-11 major portion comes from apple fruit. While as exports volume of dry fruits mainly Almond and Walnuts also increased from 0.16 lakh Mts in 2000-01 to 0.25 lakh Mts in 2010-11. This is good sign for the growth of horticulture sector and for the overall economy of the state. Farmers producing such products are also in a position to enhance their standard of living. The export growth is due to increment in area under cultivation for both fresh fruits and dry fruits also. The other reason is reasonable price fetched by the horticulture products in the outside state market and lot of demand for valley horticultural products in domestic as well as international market. The reason of less area under dry fruits and less export of dry fruits is because more government policies towards fresh fruit cultivation in the state. Under Area Expansion Scheme, 44 lakh plants of fresh fruits of Apple and Pear produced in government and private nurseries where distributed among prospective beneficiaries during 1999-2000.

## **6.6: Employment Potential and Opportunities in the**

## **Horticulture:**

Horticulture in Jammu and Kashmir has vast potential and is promising component of agriculture in the state. Fruit production is the main source of employment of people related with the primary sector. It provides directly or indirectly employment opportunities to the large section of population in the state. Horticulture sector is mainly labour intensive in nature and it has high land man ratio per hectare. It absorbs large chunk of labour from the stage of planting till to the marketing of the fruits. Labour is required from the stage of mixing of fertilizer and manure in March and April in the Apple orchids. Then insecticide and pesticide spraying process and grass cutting spreading from March to July, picking and plucking in the month of August to October, carrying produce from orchids to home place, packing and transportation lasts to the month of November and December and lastly pruning of Apple trees starts from November to January if weather permits. Both skilled and unskilled labour is required, skilled labour is required for packaging and pruning and rest other practices requires unskilled labour. Both internal (home labour) and hired man power is required in horticulture production throughout the year

Horticulture sector has lot of backward and forward linkages and through these linkages it provides additional employment to vast population linked with the box making, pesticide, fungicide (spray), and fertilizer suppliers. Greater portion of population derive their employment through transportation. Again lot of labour is absorbed in processing and storing process.

One hectare of land planted with fruit plants provides additional employment for the one thousand men days, therefore generating employment of over 6 crore men days by planting fruit trees on 65000 hectares (Horticulture department, J&K 2010). One estimate of Planning commission has enumerated that one hectare land under horticulture

provides employment to about 865 men days while as field crops provide just employment to about 143 men days. There are number of ways through which horticulture industry directly or indirectly assists in generating the employment opportunities for the people. Some hands assist in planting process of fruit plants, grading/packaging of fruits, others helps in providing seeds to the farmers, plant material, insecticides and sprays to ensure that plants as well as fruits are protected from diseases and insecticides. Plucking or picking, grading, sorting and marketing of fruits mainly absorb huge amount of unskilled manpower. The degraded fruits particularly Apple works as an input to the agro-based and processing industries which generates additional employment opportunities in the state. Horticulture industry also provides economic security to female workers of the horticulture related families by doing some tiny works in picking, grading and carriage of fruits and assists to family workers in peak season and they became economically independent. In the cultivation of Apple, dominant fruit of the state in term of area and production the man power requirement in the cultivation and marketing is met by employing the mostly paid workers in addition to the family workers. A large labour force from outside state is employed in the families cultivating apple. One report from the financial express shows that the Asia's second largest fruit mundi i.e. Sopore fruit mundi generates daily 7000- 8000 men days work for about four to five months. Thus apple cultivation provides large employment opportunities in the state. The horticulture industry plays major role in transformation of rural economy into a more monetized and developed one.

## **7: Findings**

The economy of Jammu and Kashmir is basically agrarian in nature, about 75% of population is engaged in agriculture and 60% Of revenue is collected from agriculture. At the initial stage

agriculture was mainly dominated by field crops then as a result of commercialisation of agriculture, people shift from food grain production to cash crops. Jammu and Kashmir have different topography and is home for various fruits and spices like Saffron and Black Zeera. Horticulture is one of vibrant sectors of agriculture. About 6 lakh families comprising 25-30 lakh people are directly or indirectly involved in horticulture activities (Economic Survey, J&K 2010-11). Government realising the importance of horticulture sector has declared horticulture sector as thrust area. From 1990s, horticulture sector witnessed a greater increase in respect of production, export, exchange earnings and area under production. Fruit production has increased from 11.05 lakh metric tons during 1999-2000 to 22.22 lakh metric tons in 2010-2011. Area under horticulture has increased from 2.19 lakh hectare in 2000-01 to 325133 hectares in 2010-11. Horticulture sector contributes large volume of exports 10.22 lakh metric tons in 2010-11 and foreign exchange earnings during 2010-11 were rupees 208.49 crore. This shows the overall picture and scenario of this vibrant sector from last decade.

During last decade the trend in production, export, and exchange earnings was increasing, but the area, production and export of fresh fruits was more than dry fruits. Among fresh fruits, Apple emerged as major fruit of horticulture. Apple ranks at first, with a share of 80.18% followed by Walnut with 8.98% at second rank in the export of fruits from state. District wise fruit production figures as, Baramullah emerges at first with 28.70% next is Shopian claiming 14.09% placing Kupwara at 3<sup>rd</sup> rank with 10.92%.

## **8: Conclusion**

Horticulture in India is growing sub-part of agriculture. India is having first place in production of Coconut, Cashew, Tea and spices. Tea fetches highest foreign exchange earnings.

Horticulture in India is not only a means of employment but also forms integral part of food and nutritional security. Jammu and Kashmir State have dominance of agriculture sector particularly horticulture sector because of low industrial base. About 25 to 30 lakh people are directly or indirectly involved in horticulture sector. Lot of foreign exchange is earned through horticulture product exports. So horticulture is sub-sector showing remarkable progress in the state. Meagre industrial base and under-developed private sector strengths the dominance and importance of horticulture sector for employment, income and rural poverty reduction. Salubrious climatic and topographical situations of state offer a scope for production of all types of horticulture fruits (fresh and dry) and world famous spices like saffron. Government of Jammu and Kashmir realising importance of horticulture sector declared horticulture sector as main thrust area for overall growth. Horticulture is labour intensive in nature and requires net high labour ratio from the stage of planting to the stage of marketing of production. It requires both internal as well hired labours for different activities to be taken during the production process. The data shows that there is increasing demand for horticulture fruits (dry & fresh) and world famous spice like Saffron. Tourist's arrival in the state further enhances demand for horticulture fruits. This leads to increase in production and profitability of horticulture activities. Fruit production expanded from 0.4 million tons to 1.4 million tons by 2005-06. There are also various issues and concerns which needs immediate attention and care. Production and area under Saffron cultivation, world famous and low volume and high value spice decreases, in 1998 area was 4161 hectare and production 65.25 quintals and in 2008 area under cultivation is 3110 hectare and production 50.60 quintals. The area increases but production has not increased so much and productivity remains low compared to international level. Apple production has hovering at 10 tons per hectare compared to 26 tons per

hectare in U.S.A, Austria and Newzeland. Main consumption markets are far away and the perishable nature of fruits and only one national high way which is particularly vulnerable to rain/snowfall during the season of harvesting further aggravates the problem of wastage of fruits. Several layers of intermediation in the marketing chain of fruits and rising transportation costs are other problems prevailing in the sector. Lack of sorting and grading facilities leads to mixing of low and high quality grades and bad image of brand loyalty of Kashmir fruit. Weak supply chain, poor marketing strategy, low price realisation and poor infrastructure in terms of roads, cold storage facility leads to lot of problems of wastage and low prices on the one hand and increasing costs on the other hand. Hence little surplus is left over to farmers producing even these high value crops. Production of fruits is concentrated to few districts; low infrastructure has locked the horticulture sector at low level of equilibrium. About 30% of fruit get wasted which should be processed in juice factories to provide employment and put the fruit to economic use. Horticulture sector is concentrated towards few major horticulture fruits. There are inter-regional disparities in fruit production.

## **9: Suggestions**

Horticulture sector is a vibrant and growth oriented sector in the current scenario. Various studies have shown that demand and consumption pattern has shifted towards fruits and vegetables due to increase in per capita income and rising urbanisation. But various steps and initiatives are needed. Jammu and Kashmir state has vast potential of horticulture sector to grow and has unexploited capabilities to produce fruits which have high value demand and attractive markets in India and overseas (e. g. bio-aromatics, medical herbals, organic specialty, vegetable etc.) to enable exploitation of the opportunities and enjoy full potential of horticulture sector

major programmes, policies to educate and enable the farmers to change their production techniques and grow efficiently. Assurance of stable price levels through market mechanism and supply side initiatives through better sorting and grading.

Better transportation, adequate cold storage facilities enables manipulation of supply to the advantage of seller. Market mechanism initiative by increasing the numbers of buyers and geographic spread of buyers creating a formal market model and diversification of markets will result good revenue and remuneration to farmers producing horticulture products. Market development scheme with all facilities like finance, logistics, communication, storage facilities and pack houses will induce farmers to increase production which will result in increase in productivity and profitability in horticulture.

## REFERENCES

- Alam, A. "Status and Prospectus of Mechanization in Saffron Cultivation in Kashmir" SKAUST- Kashmir.
- Agri. Marketing Advisor. 1952. "Agricultural Marketing in India Bul. on the Marketing of Some Important Stone Prone and Small Fruits and Prime Apple in India." *Marketing Series No. 62.*
- Annual Report (2010-11). "Horticulture Mission for Northern and Himalayan States." Published by Small Farmers Agriculture Consortium Sponsored by Ministry of Agriculture Government of India.
- Azad, K. C. 1991. "The Production and Marketing of Temperate Fruits, North-Western Region of India." Department of Horticulture, Government of Himachal Pradesh, *Acta Horticulture* 270: 67-74.
- Baba, S.H., Wani, M.H., Bilal, A., Wani. S.A., and Kuberi, S. S. 2012. "Pesticide Delivery System of Apple Growing Belt

- of Kashmir Valley” 25: 435-444.
- Baba, S. H., Zargar, Bilal A., Ganie S. A. and Kubrivi S. A. 2010. “Trends of fruit production in Jammu &Kashmir”. *SKUAST Journal of Research* 12(2): 200-211.
- Bhat, Javid. 2001. “Problem of Apple marketing in Kashmir.” 6: 105-200. ISSN 2277-1166.
- Bhat, G. M. 1986. “Marketing Cost, Marketing Margins And Price Spread Of Apple In Jammu And Kashmir through Different Marketing Channels.” *Indian Journal Of Agricultural Economics*, 12(4).
- Birthal, Pratap S., Awadhesh K. Jha and Harvinder Singh. 2007. “Linking Farmers to Markets for High-Value Agricultural Commodities.” *Agricultural Economics Research Review* Vol. 20 (Conference Issue): 425-439.
- Bhirthal, Pratap and Digvijay S. Negi. 2012. “Livestock for higher, sustainable and inclusive agricultural growth.” *Economic and Political Weekly* 47(26& 27).
- GOI. “*Horticulture Mission for North Eastern and Himalayan states*” published by Ministry of Agriculture Government of India New Delhi.
- Govt. of Jammu and Kashmir. 2009. “Jammu and Kashmir in Indian Economy-2008”, Directorate of Economics & Statistics Jammu and Kashmir.
- Govt. of Jammu and Kashmir. 2010. “Performance Review of Jammu and Kashmir Economy- 2008-09”, Directorate of Economics & Statistics Jammu and Kashmir.
- Govt. of Jammu and Kashmir. 2012. “Agricultural Policy J&K”.
- Govt. of Jammu and Kashmir. 2010. “Horticulture in Jammu and Kashmir.” Department of Horticulture in J&K.
- Govt. of Jammu and Kashmir. 2012-13. “Economic Survey.” Directorate of Economics and Statistics, Planning and Development Department govt. of J&K. Commission.
- Masoodi M. Amin. 2003. *Agriculture in Jammu & Kashmir a Perspective*. 1<sup>st</sup> edition. Rawalpora Byepass Chowk Srinagar: Mohisarw Book Series.

- Mittal, Surabhi. 2007. "Can Horticulture be a success Story for India." Working Paper No. 197. Published by Indian council for Research of International Economic Relations.
- Muzafar, Mir Manzoor, Reshi Ahmad Ajaz, Lone Ahmad Parvez and Rather Ahmad Naseer. 2013. "An analytical study on production and export of fresh and dry fruits in Jammu and Kashmir." *International journal of Scientific research Publications* 3.
- National Horticulture Board. 2012. "Indian Horticulture Database 2011." Ministry of Agriculture, GOI. New Delhi.
- Report, "Horticulture Plantation crops and Organic forming" published by Government of India Planning Commission.
- Report, "Principles of Horticulture and Production of Fruit crops". K. Bhaskara Professor and Head Department of Horticulture S.V Agriculture Collage Tirupati.
- Sharma, Rajni, Sharma, Vinod Kumar, Waris, Sing Inder. 2012. "Impact of Peace and Disturbance on Tourism and Horticulture in Jammu and Kashmir." *International Journal of Scientific and Research Publications* 2. ISSN 2250-3153
- Weinberger, Katinka and Thomas A. Lumpkin. 2007. "Diversification into Horticulture and Poverty Reduction: A Research Agenda." *World Development* Vol. 35 (8): 1464–1480.