



ORIGINAL ARTICLE

Assessment of Horticulture Sector in Jammu & Kashmir

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ABSTRACT

Horticulture is emerging as a fast growing sector of the economy which has a great prospective for further development. Horticulture is the major potency of the State's economy with a yearly turnover of Rs.5000 crores. At present, it provides direct and indirect employment to about 23.00 lakh citizens and most of them earn their livelihood from this sector. Around 20 per cent area of the state is under horticultural crops. The State is gifted with large natural resources and tremendous potential for growth in the agro- horti- forestry. In horticulture the state shares around 3% of all India production of fruit. Almost 45 percent of economic returns in agriculture sector account for horticulture produce. Diverse agro-climatic conditions, varied soil etc. have gifted with promising horticulture and value added products that can be marketed within the country and abroad. Horticulture has been acknowledged as a thrust area by the State Government and various developmental schemes have been taken by the Department under State Sector and Central Sector for promotion of this sector and give further boost to it. This has facilitated formulation of policies and programmes at province level. The present paper is a generous attempt to assess the current status of horticulture in the state of Jammu and Kashmir on the basis of secondary data obtained from different sources. The emphasis of the present paper is on trends in horticulture production, productivity, area under different varieties, employment generation, incentives, schemes etc and to study the future challenge in term of climate change and suggest suitable recommendations.

Key words: Horticulture, Assessment, Climate Change, Recommendations

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INTRODUCTION

Horticultural sector contributes enormously to strengthen the financial condition of Jammu and Kashmir. This is a core sector of Jammu and Kashmir agriculture and about 4.5 lakh families are engaged in it. Around 20 per cent area of the state is under horticultural crops. Horticultural sector contributes around 5000 crores to the annual revenue of the state of Jammu and Kashmir. Among the horticultural crops in the state apple occupies the chief position constituting around 45 per cent of the total area under fruit crops. Horticultural activities major thrust is given in hilly areas. The fruit crops grown in the state are almonds, walnuts, pears, cherries and apricots in temperate areas and mango, citrus, litchi, ber, papaya, guava etc. in subtropical areas. Saffron cultivation in Jammu and Kashmir is exceptional in the world. The annual production of Saffron in Jammu and Kashmir ranges from 10 to 20 tonnes. The state government has made laborious efforts to increase horticultural crops production. J&K State has been declared as Agri Export Zone for Apples and Walnut. Horticulture is the important contributor to SGDP. The production of 1.83 MTs in 1972-73 has risen to the level of 24.94 LMTs with turnover of Rs. 6000.00 crore approximately during 2015-16. Horticulture sector also

provides jobs to other related trades such as fertilizer, pesticides, Agriculture machinery, traders and processing of fruits, etc. The Department of Horticulture Planning and Marketing provides timely market feedback and guide the fruit growers in marketing, handling of post-harvest operation/activities in order to face the market challenges. The Jammu and Kashmir Economy depends mostly on conventional form of occupation. Unaffected and unaltered by modern day industrial developments and changing times, the indigenous traditional occupations of farming, animal husbandry and horticulture forms the strength of character of the economy of the state of Jammu and Kashmir. Popularly referred to as the valley of flowers, the Kashmir horticulture is one of the well-known economic sector of the state. Known for the wide variety of fruits and flowers, the horticultural sector forms the backbone of the economy of Jammu and Kashmir. The horticultural sector contributes around twelve hundred crores to the annual revenue of the state of Jammu and Kashmir. The state government has declared the horticulture to be one of the most significant economic sectors of the state that has contributed immensely to the strengthening of the financial condition of Jammu and Kashmir. Blessed with a decent climate and suitable soil, Kashmir produces many different kinds of fruits and flowers. The majority of the local population of Jammu and Kashmir is directly or indirectly concerned with horticulture of the state. The government of Jammu and Kashmir has devised several plans to improve the marketing strategy of the numerous horticultural products of the state. Most of the products of horticulture are exported that helps the state to receive a large chunk of the revenue.

Few products are as under:-

1. **Apple:** It has various varieties like Ambri, Delicious, Maharaji, American, Chamora, Rajakwari, and Hazaratbali. These varieties of Apple are Indigenous to Kashmir and continue to keep its superiority by virtue of its crisp, sweet flesh and excellent aroma. Delicious apple has a longer shelf life and is an excellent dessert variety.
2. **Cheery:** It has various varieties like Awwal number, misri, makhmali.
3. **Pear:** It has various varieties like pear William, Chinese sandy pear.
4. **Almond:** Kashmir Almond known for their superiority of taste. It is most significant amongst consumers because of highly nourishing and medicinal value.
5. **Walnut:** Kashmir walnut is popular within the country as well as in foreign market. It reduces/uphold the cholesterol level in human beings. Walnuts are exported to foreign countries. It is harvested in October.
6. **Plum:** It is medium in size and Roundish in Shape. Its skin is thin and smooth. Flesh Deep Red, juicy, sweet and full of aroma. Harvesting period is August-September.
7. **Strawberry:** Earliest fruit available in Kashmir. Sub-tropical areas of Jammu have potential to grow the crop under irrigated conditions. High yield with 5 to 9 percent sugar is obtained.
8. **Apricot:** The Apricot is known by the name of Gilgiti Sweet. It is moderately flavoured and sweet. The Harvesting Time is between June-July.
9. **Saffron:** It is a Cash crop of J&K state. Saffron is known as a Golden Condiment and having medicinal value. It has delicate aroma and pleasant flavour. It is a Potential foreign exchange earner. It is typically cultivated in Kashmir and Kishtwar. Harvesting time is October-November.

OBJECTIVES

The major objectives of the proposed study are:

1. To present general profile of horticulture production, export, foreign exchange earnings and developmental initiatives
2. To highlight available incentives and schemes for farmers under horticulture
3. To point out the challenge of climate change and suggest recommendations

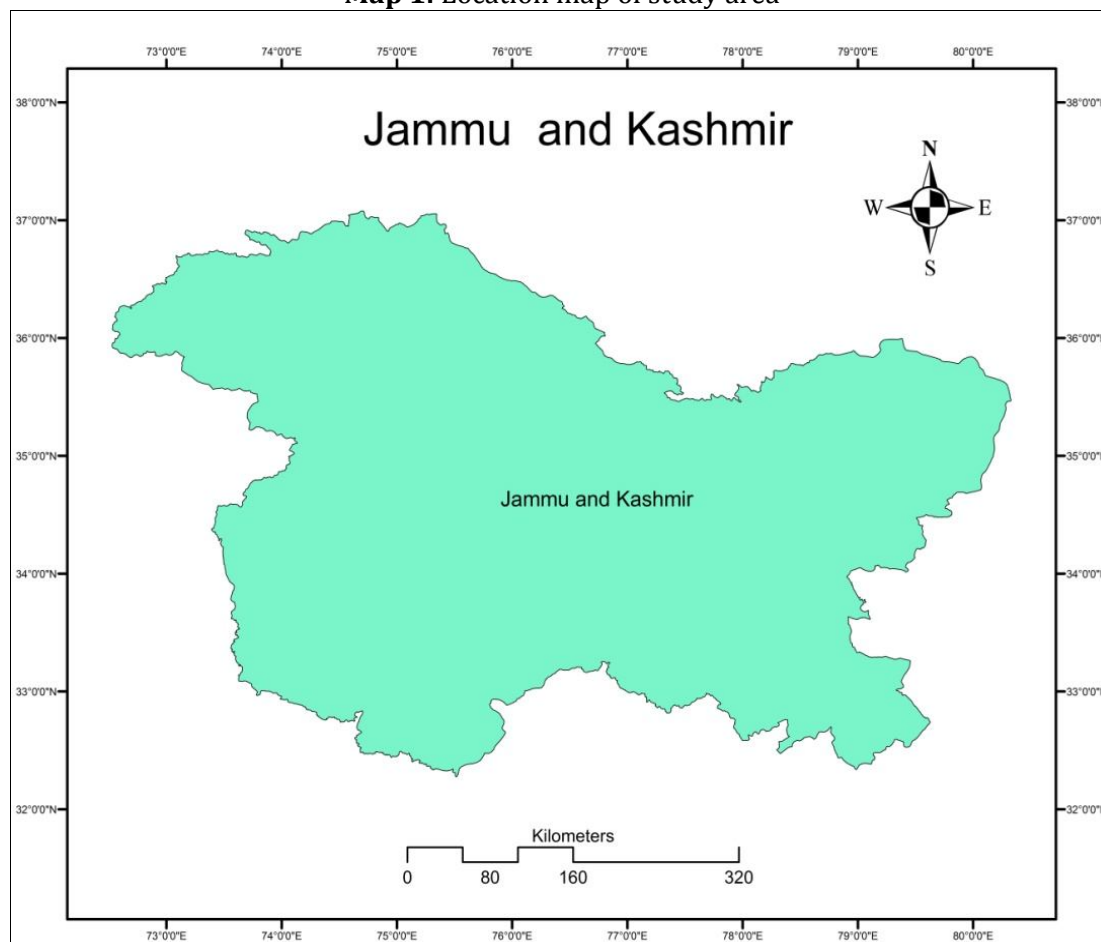
METHODOLOGY

The present study is based on secondary data. The secondary data were collected through Directorate of Horticulture Jammu, Directorate of Horticulture Kashmir, Agriculture and Farmer Welfare, Newspapers, Magazines etc. Simple statistical techniques are used throughout the study. The tabulation of the data is done by using Microsoft excel software. Cartographic techniques have been used for the preparation of map. Diagram were prepared with the help of Microsoft excel software.

STUDY AREA

Jammu and Kashmir, located between 32° 17' N and 36° 58' N latitudes and 73° 26' E and 80° 30' E longitudes, constitutes the northern most extremity of India. The Total area of Jammu and Kashmir is 222236 sq. The state is situated mostly in the Himalayan mountain range. It touches border with states of Himachal Pradesh and Punjab. The State has frequently a rugged terrain due to which several parts of it remain partly connected. The state has three different parts namely 1) Jammu 2) Kashmir and 3) Ladakh. The state has a cultivable area of 8.58 lacs hectares. The economy of the state is primarily agricultural. The state occupies 19th rank in population, with 125.41 lakh souls as per 2011 census.

Map 1: Location map of study area



Source: revenue Department (J&K), Census Atlas of India, 2011

STATUS OF HORTICULTURE SECTOR IN JAMMU & KASHMIR

J&K State is well recognized for its horticultural produce both in India and abroad. The state offers good scope for cultivation of horticultural crops, covering a variety of temperate fruits like apple, pear, peach, plum, apricot, almond, cherry and sub tropical

fruits like mango, guava, citrus litchi, phalsa and Berete. Besides, medicinal and aromatic plants, floriculture, mushroom, plantation crops and vegetables are cultivated in the state. Apart from this, well known spices like saffron and black Zeera are also cultivated in some patches of the state. As a result, there is a perceptible change in the concept of horticulture development in the state. There are roughly 7 lakh families comprising of about 33 lakh people which are directly or indirectly associated with horticulture. Horticulture development is one of the driving force areas in agriculture and a number of programmes have been implemented in the past, resulting in the generation of higher incomes in the rural areas, thereby improving the quality of life in villages. The growth of horticulture sector can be attributed to various initiatives taken by the GoI and State Govt; towards market interventions viz. establishment of fruit mandies, technological support, awareness options, publicity inputs, research extension etc. Apple is the most important fruit. As per the horticulture census 1999-2000, about 55% of the area is covered under apple. It is also significant in terms of production and provides the maximum marketable surplus. However seasonal variations coupled with floods of September 2014 resulted in loss to the horticultural industry. However, the increased production yielded some good results and our export worth Rs. 4500.00 crore is expected during 2014-15 as against Rs. 5000.00 crore during 2013- Food processing industry offers incredible opportunity for commercial exploitation of horticulture of the State but commercial processing is around 1% only due to lack of post harvesting and processing facilities as well as unscientific packaging. Therefore, opportunities are open for exploiting the potential under processing, with individual, combined venture and Government efforts. Area under Fruits in J&K State has increased from 2.95 lakh hectares in 2007-08 to 3.60 lakh hectares in 2014-15 (estimated).

SPECIES WISE AREA UNDER HORTICULTURE

Looking to the specie-wise details of area figures under fruit for the year 2012-13, it is pragmatic that largest area of 45.34% is occupied by apple out of total area of 355921 hectares under fruit. Walnut is the next major fruit occupying 26.86% in the overall area under fruit followed by Almond, Pear and Apricot.

Table 1: Variety wise area under Fruit cultivation (area in 000 hectares)

Year	Apple	Pear	Apricot	Cherry	Other fresh	Walnut	Almond	Other dry	Total fruits
2004-05	107.93	10.54	4.93	2.55	41.62	74.89	15.43	0.42	258.31
2005-06	111.88	11.00	5.16	2.59	43.60	77.22	15.55	0.41	267.41
2006-07	119.04	11.25	5.43	2.75	46.24	81.39	16.37	0.62	283.09
2007-08	127.80	12.10	4.78	3.14	48.32	82.05	16.40	0.55	295.14
2008-09	133.10	12.35	4.92	3.30	49.65	84.56	17.18	0.56	305.62
2009-10	138.19	12.55	5.00	3.41	50.57	87.28	17.54	0.60	315.14
2010-11	141.71	12.53	5.85	3.46	53.50	89.78	17.65	0.58	325.06
2011-12	154.72	13.21	6.05	3.48	54.11	83.61	16.41	11.19	342.78
2012-13 (estimated)	173.63	20.81	9.20	3.75	55.93	81.72	31.63	0.86	377.53

Source: Agriculture Production Department, J&K

INTERPRETATION:

From the table it is clear that year after year there is considerable increase in the area under different varieties. The area under total fruit cultivation has been increase over 31% from 2004-05 to 2012-13. The area under apple was about 41% of the total area under fruit crops in 2004-05 which has increase to more than 45% in the year 2012-13. There is more than 100% increase in the area under almond cultivation thus it saw the maximum increase of area under production.

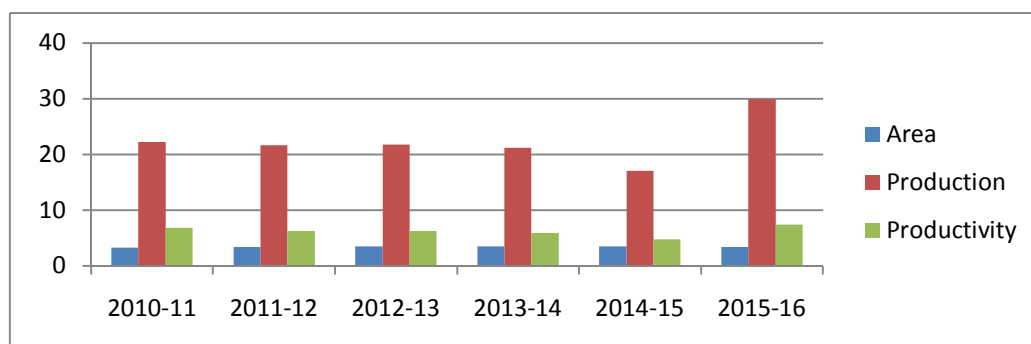
HORTICULTURE AREA, PRODUCTION AND PRODUCTIVITY, J&K

Area under Fruits in J&K State has increased from 2.95 lakh hectares in 2007-08 to 3.57 lakh hectares in 2015-16 (estimated). The production increased from 16.36 lac MTs in 2007-08 to 24.94 lakh MTs in 2015-16. In Jammu and Kashmir State especially in Kashmir Division, horticulture plays a significant role in contributing to the development of the economy of the state. As per estimates, over 6 lac families are actively involved in horticulture sector. This sector is one of the most important employment generating sectors in the state.

Table 2: Area, production and productivity of horticulture

Year	Area (Lakh Ha)	Production (Lakh MTs)	Productivity Per Hect.
2010-11	3.25	22.22	6.83
2011-12	3.42	21.61	6.32
2012-13	3.48	21.74	6.29
2013-14	3.55	21.17	5.96
2014-15	3.56	17.12	4.76
2015-16	3.38	24.94	7.38

Source: Directorate of Horticulture Department, Jammu & Kashmir

Graph 1: Area, production and productivity of horticulture**INTERPRETATION:**

Year after year, there is a significant increase in area and production under horticulture crops except the current financial year when there is slight decrease in the area under horticulture but production and productivity has been increased. The continuous increase in production and productivity can be attributed to modal factors like commitment of the farmers/orchardists towards this sector, continuous efforts of the Department of Horticulture and Research Organization and above all the conducive agro-climatic conditions of the State. There has been some loss to the horticulture production from 21.17 lakh MT in 2013-14 to 17.12 lakh MT in 2014-15 due to unexpected rains followed by heavy flood in some areas of the State. It is believed that production is registered without proper crop-cut estimation therefore the fluctuations in production figures need reconciliation.

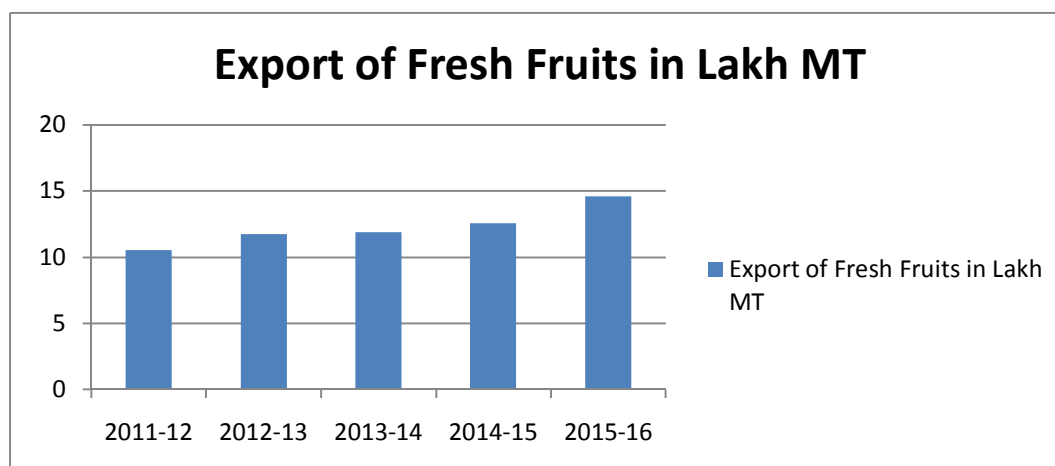
EXPORT OF FRUIT

Export of fruit has occupied a prominent place in trade of the State but it is showing fluctuating trend over the years.

Table 3: Export of Fruits

Year	Fresh Fruits (Apple(95%), Pear, Cherry, Apricot & Peach etc. (in Lakh MT)	Walnut Fresh (in Lakh MT)
2011-12	10.54	0.19
2012-13	11.76	0.18
2013-14	11.92	0.18
2014-15	12.55	0.15
2015-16	14.58	0.14

Graph 2: Export of Fruits

**INTERPRETATION:**

The total quantity exported for the year 2011-12 was 10.54 lakh MTs against 14.58 lakh MTs exported for the current financial year 2015-16 (ending November, 2016). Although, the production under horticulture sector is increasing year by year but it further needs to be given focused attention to register significant growth in the export of horticulture produce outside the State. The reason for low growth in export of fruits outside the State is introduction of Market Intervention Scheme (MIS) under which "C" grade apples are procured at a support price of Rs.6 per kg. For processing into juice concentrates in the locally established juice processing units. Secondly, India is also importing fruits from foreign countries as free trade policy which is in force at the country level.

FOREIGN EXCHANGE EARNINGS:

The Government is making all efforts to promote exports from Jammu and Kashmir State. State's fruit especially dry fruits are also exported to other countries and in turn earn substantial foreign exchange. Foreign exchange earned on account of export of dry fruit viz; Almond and Walnut (in shell and kernel) during the year 2013-14 was Rs 365.25 crore.

DEVELOPMENTAL INITIATIVES FOR HORTICULTURE SECTOR IN J&K**Table 4:** Pattern of Assistance under RKVY In respect of Horticulture Sector

S.No.	Components	Pappern of Assistance
1	Agriculture Mechanization: Provision of Manually Operated Tools / Machinery like PP Machinery, Orchard Ladder, Pruning saw, Spray Pumps, Secateurs, and other Farm implements	50% financial assistance limited to Rs.2500/- per beneficiary
2	Water Lifting Devices	50% of Cost limited to Rs.10,000/- per unit
3	Cultivation and Promotion of Pecan nut and Walnut	An assistance @ Rs 0.18 lac per ha will be given to the beneficiaries on account of planting material and cost of inputs.
4	Nutritional Programme for Urban areas	Assistance @ 25/- per plant which includes the cost of plant material and plantation charges

Source: Directorate of Horticulture Department, Jammu & Kashmir

CENTRE AND STATE SPONSORED SCHEMES FOR HORTICULTURE IN J&K**Table 5:** Financial Performance under Central Sponsored Schemes (Rs in lakhs)

S.No	Name of the Scheme	2013-14		2014-15		2015-16		2016-17
	CSS	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure	Proposed Allocation
1.	RKVY	531.00	485.16	185.00	150.34	109.20	108.11	1068.31
5.	PMKSY	-	-	78.30	17.68	19.90	0.12	201.43
6.	MIDH	2444.60	1819.73	1632.62	1407.87	3841.79	3361.22	4221.00
7.	ATMA	58.79	51.01	10.04	10.04	30.00	25.92	25.00
8.	SMAM	-	-	28.96	0.12	47.94	20.97	25.00
9.	NMSA	-	-	102.65	0.00	257.30	229.75	-
Total		3034.39	2355.89	2037.57	1585.89	4306.23	3745.97	5540.70

Source: Directorate of Horticulture Department, Jammu & Kashmir

Table 6: State Plan (CAPEX)

S.No.	Name of the Scheme	2013-14		2014-15		2015-16		2016-17
	CAPEX	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure	Proposed Allocation
1.	CAPEX	1894.41	895.56	2180.22	1030.96	2639.84	2463.89	7615.00

Source: Directorate of Horticulture Department, Jammu & Kashmir

INTERPRETATION:

Under CSS during 2015-16, a total allocation of Rs 3034.39 lakh was earmarked under all the schemes but the proposed allocation for 2016-2017 is Rs 5540.70 lakh and it is expected that full allocated amount will be utilized during the reference year. The strangest feature of this table is that there is under utilization of allocated amount except the amount allocated under RKVY. The under utilization condition is also worst in case of PMKSY and SMAM. The fund allocated under state scheme is high as compare to CSS. Tangible results are expected during 2016-17 under the various centrally as well as state sponsored schemes to raise the standards of horticulture (Table 5 & 6).

EMPLOYMENT OPPORTUNITIES IN THE HORTICULTURE SECTOR

One hectare of land planted with fruit trees provides supplementary employment for one thousand man-days, thereby generating employment for over 6 crore man-days by planting fruit trees on 65000 hectares. It provides direct and indirect employment to about 23.00 lakh people and the majority of them earn their livelihood from this sector. Some hands assist the farmers in marketing their products; others help in providing the seeds, the plant materials and insecticides and chemicals to the farmers so as to ensure that the plants are protected from diseases and pests; others assist in the picking/harvesting of fruit. The cultivation of fruits is labour intensive and requires a appreciably higher labour force, starting from the stage of planting the trees, to the point of its marketing. The manpower prerequisite in the cultivation and marketing of apples as well as field crops is met by employing paid workers and even the support of family members. For fruit processing facilities, The Department of Horticulture has established one Fruit and Vegetable Craft Centre at Jammu and 5 Fruit Preservation and Utilization Extension Centers at Udhampur, Kathua, Poonch, Rajouri, Doda (Bhaderwah) Districts of the Division. These centers are also providing employment opportunities.

CONCLUSION, CHALLENGES AND SUGGESTIONS

The Horticulture sector in Jammu & Kashmir is rising as a fast growing sector of the economy which has a immense potential for further development. This sector contributes appreciably to the economic and ecological development, employment generation, export and nutritional requirement of the people of state. There has been substantial increase in the total area under cultivation of different fruits, their production and productivity has also increased for the last five financial years. This is due to the increase in demand for horticultural produce due to greater health awareness, rising income, export demand and growing population. Hence it poses the challenge for further increasing the production and productivity of horticultural crops for nodal agencies of state government as well as centrally sponsored schemes. The matter of climate change and climate variations has resulted in more uncertainties and risks in this already high capital intensive system. This has resulted in further aggravating the constraints on horticulture production system. The major challenges before us is to have sustainability, higher levels of production, competitiveness to stay in market, regular production, land, water and more importantly threat of climate change. In order to meet the above challenges we need innovations for improving horticultural crops production in changed scenario. Fruit crops being susceptible and succulents are generally more sensitive to environmental extremes. High or low temperatures and water stress are the main cause of low yields. Under climate change scenarios the impact of these stresses would be compounded. With global warming production areas for particular crops and/or time of planting could be changed. For many horticultural crops areas have been defined for fruit crops and creating new infrastructures in new areas would not be an easy task. Location of important production area is often defined as much by available land, markets and infrastructure as by climatic conditions. Thus, climate change and CO₂ are likely to alter vital interactions between horticultural plants and pollinators, insect-pests, diseases and weeds etc. Keeping in view the nature of crop, its sensitivity levels and the agro-ecological regions in Jammu and Kashmir, the crop based adaptation strategies must to be developed, integrating all available options to sustain productivity. To prepare ourselves for climate change and for formulating a sound action plan we must recognize the gaps in information, prioritize researchable areas, and formulate tangible policies.

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