

A study on impact of climate change on horticulture sector in Jammu and Kashmir: an economic overview

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Abstract

Climate plays an important role for every type of sector, especially in agriculture. Climate threat increases from various interactions between environments, economic, social, religious and political systems. The livelihood of the society can be badly affected directly or indirectly due to the climatic changes. Horticulture is the backbone of Jammu and Kashmir and majority of the population getting their livelihood through this sector. The researcher attempted to study the effect of horticulture crops such as apple, walnut and saffron due to various climatic risks. Recently examples of the state were the flood damage by heavy rainfall in 2014 and dry weather in 2016. In the latest induction of climate change an unpredicted hailstorm compiled with untimely rain has damaged the crop and causing loss of 2 billion rupees. The floods of 2014 make the destruction of major crops like, apple, pear, walnut, saffron, cherry etc. and causes loss of over 14.25 billion rupees. For the last many years the production of saffron is decreasing at high level, in 2015 the saffron production was below average. The less precipitation and high temperature records from last many years has damaged the crops, mostly apple, saffron and walnut and at the same time has caused diseases like scab, red mite etc. that damages the fruits. Due to high weather and humidity the insect and germs like bacteria, fungus, algae grows more and affects the fruits. Due to low rainfall the growth and colour remain slow as in apple and saffron which results in the low price and also reduces its taste.

Keywords: *climate, horticulture, Livelihood.*

1.1 Introduction

The state of Jammu and Kashmir comprises of three regions namely Jammu, Kashmir and Ladakh, having distinct climate geographical outlook and agro climatic zones. Each zone

having its own characteristics that largely determines the cropping pattern and productivity of crops. Agriculture plays a very prominent role for development of economy of state of Jammu and Kashmir. 70 percent of the population

depends directly or indirectly on agriculture and its allied sectors. The state has cultivatable area of 8.58 lakh hectares. The economy of state is predominantly agricultural and is well known for its horticulture 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 guava, citrus litchi and phalsa. Besides medicinal and aromatic plants floriculture, mushroom plantation crops and vegetables are cultivated in the state. State also has the honour of being amongst the world's few places where quality saffron (*corcus sativus*) is cultivated. Pampore tehsil of district Pulwama which is situated at a distance of 17 kms from Srinagar is famous for its high grade saffron in the world. Saffron is also grown though on a limited scale in kishtiwari district of jammu region.

Horticulture development is one of the thrust area in agriculture and a number of programmes has been implemented in the past, resulting in the generation of higher incomes in the rural areas thereby improving quality of life in villages. The spice wise details of area figures under fruit of the year 2014-15 is observed that largest area of 45.8 percent (161364 hectares) is occupied by apple out of total area of 355921 hectares under fruit . Walnut is the next major fruit occupying 26.86 percent among all other fruit.Saffron which is one of the most important commercial commodity of Indian agriculture, J&K enjoys a virtual monopoly in the sub continent. At present the industry gives exchequer of Rs 236.55 crore as against of Rs

4642.5 crore. Economic product of saffron is pistil with a trifid stigma, it is unique plant whose active period and effective growth occurs in fall and winter. Corm sprouting flower initiation and time of flowering are the critical stages that are influenced by environmental fluctuation in terms of temperate and availability of water. Day temperature of 23⁰c -25⁰c in the month of September is critical for corm sprouting and flowering starts when the day temperature reaches to 17⁰c with a night temperature around 10⁰ c. Besides temperature, water is the critical factor for these changes during September. Any change in the critical limit of among these factors, influences the growth of the saffron plant.

Till 1999-2000 Kashmir was receiving well distributed precipitation in terms of rain and snow to the extent of 1000-1200mm which at present has decreased to 600-800mm. Usually critical months of September and October are dry and thus flowering is delayed due to delayed sprouting.

1.2 Occurrence of hailstorm: Due to wide fluctuations in temperature hailstorms are experienced causes damage to flowers and various stages of growth and development and damages plants directly.

1.3 Occurrence of insect pests and diseases: under the changing climate scenario existing fungi, pathogen and viruses may cause more damage to the crop. An increased number of sprays are now required for the routine control of pests. The number of sprays has increased from

about four per year in 1980s to about 11 per year today. The disease like red mite and scab are common in each part of the valley due to the existing climate.

1.4 Blooming and yield: Climate change has brought alternation in the pattern of blooming bearing and ultimately the fruit yield. The lack of early cold in December and January has adversely affected the production of various fruits. Apart from this, heavy rains wash away the pollen in plants during these months. Chilling affects the flowering and subsequent fruit setting quality as well as quantity in month of April and May.

1.5 Poor pollination: The occasion of spring frost and low temperature at the time of flowering and fruit setting adversely affects production of fruits like saffron, apple and walnut. The area's most vulnerable to influence of low temperature are located at high altitudes where good spring season with adequate sunshine promote apple, walnut and saffron flowering. However due to fluctuating temperature during this critical period particularly rains accompanied low temperature inhibits the transfer of pollen because of restricted bees activity.

1.6 Lack of sufficient chilling hour: Temperature of 7°C and below are affective in meeting the chilling requirements of different temperate fruits including apple, saffron and walnut. Sufficient chilling hours are not being met as there is lack of snowfall and rainfall during winter month especially in hilly areas of Kashmir. Hence results an erratic and poor flowering which is responsible

for poor fruit set with low yields. The extinct plantation of apple in south Kashmir districts such a Shopian, Pulwama and Kulgam are the live examples of impact of climate change. The low snowfall and the less precipitation have affected the saffron production from last many years.

Suggestions

- The government and farmers should have to create deep bore wells near saffron fields at different places of valley.
- The farmers should have to follow the instructions of experts at different stages of cultivation.
- The government of Jammu and Kashmir should have to make people aware about the harmful effects of climate and programmes should be conducted about these severe hazards.
- The farmers should have to use different resources efficiently in order to protect the valuable climate.
- Ecological ratification of change in climatic condition is urgently needed in order to increasing incidence of pests and disease.

Conclusion

Global warming is unavoidably happening and affects many aspects of life on earth. The productions of various fruits of Jammu and Kashmir are badly affected by the challenging climatic conditions. Recently floods destroyed the apple quality and quantity in various parts of the state. The studies revealed that livelihood of

people are in worse situation due to the present climate. The fruits such as apple, saffron, and walnut are the major source of income for Kashmiri population and are facing challenging movements day by day.

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