

## THE AGRICULTURAL ECONOMY OF THE HILLY REGION COULD NOT KEEP UP WITH CLIMATE CHANGE

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**ABSTRACT-** Growing climate change has made India's hilly region totally upset. The hilly region's agricultural economy is totally frustrated. Warm weather monsoon wind side, landslides, cloudbursts, flashfloods, etc. the day- night companions of the mountainous region. Unusual changes in the climate, the hilly region has had a profound impact on agricultural production

**Keywords-** Cloudburst, Horticulture, Disaster, Harmonious, Crop-diversity, Flashflood.

The relationship between climate change and agriculture is very important. For the past several decades, the Indian hilly areas have been fighting with climate change. The horrible result of climate change challenged the hilly agriculture. Himalaya Mountain is the highest mountain range in the world. Jammu Kashmir, Uttarakhand, Himachal Pradesh – are the three states, situated on the northern Himalaya. On the other hand, Sikkim, Northern part of West Bengal, Assam, Arunachal Pradesh are situated on the eastern Himalaya.

Moisturelessness of soil, excessively hot summer, increasing cloudburst etc. unusual scanty snow fall have left negative effect on agriculture across the Himalayan range. These are going up day by day. In the hilly region, agriculture is considered as the most fundamental economic earning, because no other facility of earning is present over there. Due to heavy climate changes for last few decades the temperature has increased. The temperature in Kashmir valley has increased by 1.45 degree Celsius. Temperature is increasing in atmosphere due to gradual increasing of greenhouse gases. Extra growth of greenhouse gases and CO<sub>2</sub> aerospace horticulture effectiveness in the mountainous areas due to the air temperature. Horticulture has a huge impact in the mountainous areas. Winter crop cycle is severely damaged due to continuous increase in temperature. Due to the additional increase in greenhouse gases, rising temperatures, causing damages of apples. Advancing cropping seasons, irregular rainfall, changes in the flowering behavior of plants, erratic rainfall have added much bad effects towards agricultural production across north India. Some of the crops which are grown in hilly areas, their ideal climate is restricted to the mountainous regions. In the climate fanaticism, the production of these crops is going to be destroyed due to the climate change and natural disaster. The loss of production and quality is going to happen.

In Uttarakhand, climate change plays a key role in agriculture. In Uttarakhand as much as 40 kinds of crops including oil-seeds millets etc. are produced, but the ever running climate changes have effected badly on the crop-diversity in that region. To survive from the horrific intake of climate change, farmers are often forced to change cropping pattern and change their agricultural land in the mountainous area. The agriculture in the hills is getting badly affected by of erratic monsoon winds, both a “Kharif” and “Rabi” crops are being destroyed. Like excessive rainfall destroyed crop, similarly scarce rainfall is a negative effect of change in climate. Uncertainty of rainfall and scarcity of rainfall has badly affected of agriculture in the hills. It has also made cultivators face difficult situations in cultivating crops in the spring seasons.

**Growth in area (l ha), production (l. tons) and productivity (t/ha) of temperate fruits from 1960-61 to 2010-11**

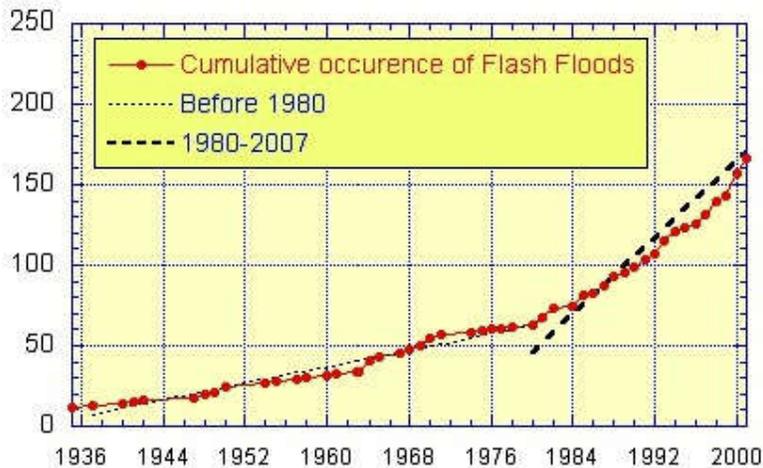
Crop	1960-61			2011-12			Percent growth from 1960-61 to 2011-12		
	Area	Prod <sup>n</sup>	Prody <sup>n</sup>	Area	Prod <sup>n</sup>	Prody <sup>n</sup>	Area	Prod <sup>n</sup>	Prody <sup>n</sup>
Apple	0.44	1.85	4.15	2.89	28.91	10.00	556.8	1462.7	140.9
Pear	0.06	0.33	5.41	0.379	3.34	8.81	531.6	9121.20	62.84
Peach	0.10	0.43	4.30	0.364	2.43	6.67	264	465.11	55.11
Plum	0.03	0.19	3.66	0.246	1.99	8.09	720	947.30	121.0
Apricot	0.03	0.08	2.75	0.048	0.167	3.42	60.00	108.75	24.36
Cherry	0.01	0.03	2.50	0.032	0.133	4.12	220.0	343.30	64.80
Almond	NA	NA	NA	0.023	1.63	0.70	-	-	-
Walnut	0.14	0.12	0.85	0.308	0.36	1.16	120	200	36.47

*NHB, FAO, 2010-11*

Source- <https://goo.gl/images/N1Rpvq>

In Uttarakhand, climate change plays a key role in agriculture.

Due to floods in 2013, the destruction of Mandakini and Aklananda flooded nearly 100 hectares of agricultural lands. In the year 2013, Uttarakhand has to face a dangerous condition and the reason why a huge amount of standing crops were destroyed. Approximately 20000 hectares were destroyed and huge amount of crop were wasted, Rice, barley, millet, pulses, fruits are also get affected. The agriculture economy collapsed. Near about 25-30% of total cultivation are badly affected.



Source- <https://goo.gl/images/NthNTD>

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Source- <https://goo.gl/images/C6ETZL>

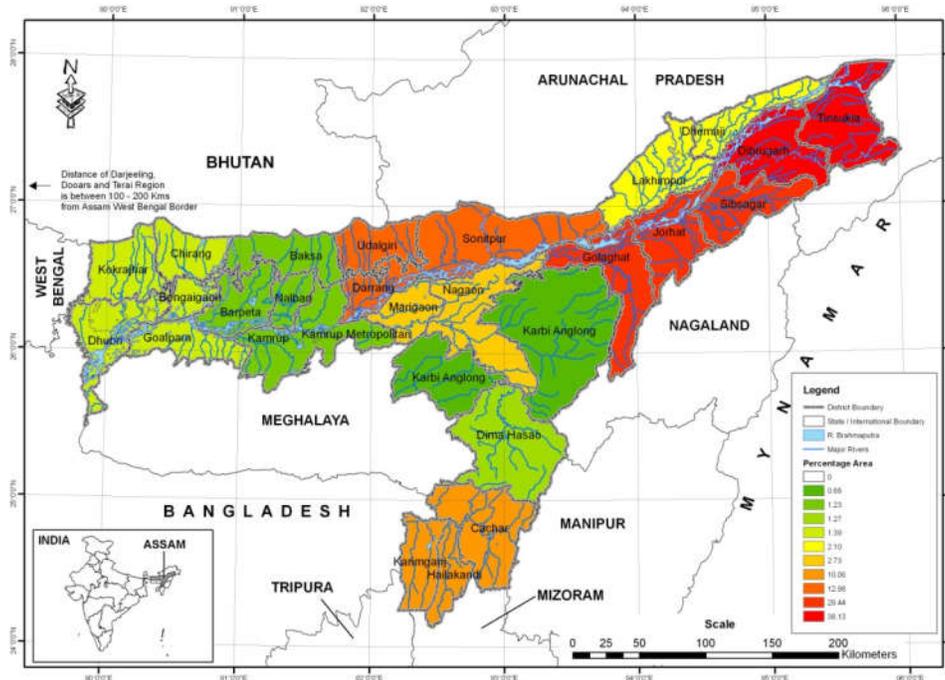
In Palm valley the farmers have become frustrated due to decrease of rainfall.

The Kullu Valley of Himachal Pradesh in the Northern Himalayas is a complete agricultural area. Almost 66% of the people in this region are engaged in agricultural activities. Apple is a commercial crop. 48% area of Himachal Pradesh is engaged in this cultivation. From the frustration of apple production, due to the continuous increase in the various natural causes, the farmers of the hilly region are concentrating on the production of Annan crops. Due to inadequate snowfall, change in temperature and rainfall apple cultivation is facing a challenge in Kullu in the northern Himalayas. Apple plantation for high aviation has decreased nearly twenty percent.

The change in the climate has also badly affected the cultivation of fruits in the hilly regions. For last two years, the lemonades production has decreased effectively. For example, in 2009-10, the production from that region was approximately 22,184 which has now decreased to 21,704 in 2010-11.

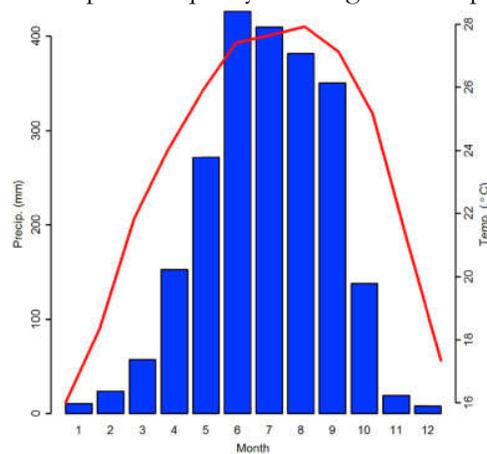
Kangra valley in Himachal is very famous for orange and other lemonades production. But with increasing of temperature, the climate has changed abruptly which actually reduces the production of lemonades.

Jafran is one of the Kashmiri saps. Sappier production is declining by 40% after decades of climate change. After 14 years of climate change, due to the flash flood and deterioration of Jammu Kashmir, many agricultural lands and crops were destroyed. About 17% of the North East hill region produces tea. The water cycle in the mountains region, has changed excessively due to climate change.



Source- <https://goo.gl/images/UTtP9g>

Tea is a greasy crop. The favorable environment of the tea production is 18-30 Celsius. But the rising temperature metabolism has a negative impact on quality of this garden crop.



SOURCE- <https://goo.gl/images/T4ErU5>

The amount of tea production and quality has been decreased due to continuous flow of greenhouse gases. Darjeeling which is located in the eastern Himalayas. On the world’s famous Darjeeling tea, the climate change has been a great antidote. A lot of crops are lost in the flood in Assam in every year.

### Conclusion

So, we can say that the climate change has caused a complete devastation of farming in the hill region. The negative result of climate change due to green house gas cost a lot in the mountain region of India. That is why India’s agriculture is pushing towards despair. Everyone will have to come forward for this. Harmonious agriculture can be saved through proper disaster management and government co-operation.

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