



# Climate Change and Its Effect on Indian Agriculture

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### Abstract

The warming nature of the earth, the climate change due to it, and ultimately the destruction of humans as well as all animals and plants, trees, species, crops, etc., there is an absolute need to Increase awareness among people and educate them to reduce the impact and sensitivity towards all these subjects. In today's situation, climate change has become a serious and sensitive matter; hence various measures are being taken to stop climate change. Amidst this concern, the debate has also gained momentum that human activities, including industrial ones, are not causing climate change. That is, other reasons are also responsible for this. However, according to a report published in the prestigious journal 'Science' this September, the ice-covered Arctic region has become a victim of climate change due to increased heat in recent decades. According to the study, All this is happening due to greenhouse gas increases. Darrell Kaufman, a climate expert at

That is, due to such climate change activities, the effects of climate change are beginning to be seen even in typical polar countries. Some scientists consider this to be a part of natural phenomena. Even if this idea is true, taking measures to correct climate change is necessary. But the crisis facing us needs an immediate solution. The life of the common Indian can be improved only by appropriate policy changes. The true definition of human development will Be fruitful only if clean air, water, disease-free environment, and conservation of all living beings can be ensured.

### Introduction

The average temperature of the Earth has increased significantly since the Industrial Revolution. This is undoubtedly due to the increase in greenhouse gases. If these are not reduced, there is a possibility of a huge increase in the average temperature of the earth in the future. If this turns out to be true, the threat to countries ranging from Frenchpolynesia to Maldives and Sri Lanka-Mauritius will increase further. Due to large parts of these



countries going under the sea, the population there will be displaced somewhere and will also have to be rehabilitated. In this sense, fixing climate change is a global responsibility. And we are not doing it. The forests are being cleared. On the one hand, the use of fuels like petroleum is increasing, while on the other hand, factories are spewing black smoke. Carbon dioxide is continuously increasing in the atmosphere. Rich and industrialized countries are responsible for the increase in these greenhouse gases. Today he has to repay the debt of all the deprived communities of the world. If the amount of damage done to the environment by a few countries by harming the earth's ecology is calculated in money, then with that money the poverty of the entire earth i.e. the deprived societies around the world can be removed. And if this happens, then efforts to save the earth can bear fruit in earnest. In UNDP's Human Development report for the year 2007-08, special attention has been paid to climate change. It says that climate change will create obstacles in social upliftment, especially in developing economies. This comment holds special importance in the context of India because, in a developing country like India, the need for money will keep increasing to fix poverty, illiteracy, poor infrastructure, poor health care, etc. and if climate change continues to affect us, the

situation will become more dire. On these parameters, India still ranks 128th out of 177 countries, i.e. very low. If we look at the thickness of the economy, it is sufficient but the actual situation is very bad.

### **Reason for climate change**

Human activities, particularly the burning of fossil fuels (i.e., coal, natural gas, and oil) in power vehicles, factories, and homes, release carbon dioxide and other greenhouse gases into the atmosphere. Other activities, including cutting trees, also emit greenhouse gases. In the present world, due to increasing industrialization and increasing number of vehicles, emissions of greenhouse gases have increased. Incidents like increase in global temperature and climate change due to increasing greenhouse gas emissions have attracted the attention of the entire world. According to the World Meteorological Organization, the year 2001 was the fifth hottest year in history. The agricultural sector is being most affected by the warming earth. This warning is even more important in the context of India because agriculture is the cornerstone of the Indian economy. India is among the first 10 countries that will be most affected by climate change in the list released by the Global Climate Risk Index 2010 in the conference held in Copenhagen, the capital of Denmark, in December 2009. According



to a study, winter temperatures may increase by approximately 4 degrees by 2050. This is expected to reduce monsoon rainfall by 10 to 20 percent. Changes in the amount of rainfall will also have an adverse effect on the productivity of crops. Climate change is affecting our national Income. The share of agriculture in national income Has declined by 1.5 percent in the last three years. The year 2009 has been a cautionary year for us. This Year, rainfall was reduced by 23 to 24 percent due to which the standing crops dried up in many part of the country, due to which not only the production of Food grains decreased but their prices also increased Rapidly. According to an estimate, food grains worth Rs. 20,000 crore were lost due to drought in 2009. In the conference organized in Copenhagen, Agricultural scientist Dr. M.S. regarding the effects Of climate change on Indian agriculture, Swaminathan said that it will affect about 64 percent of the People whose livelihood is agriculture and the Biggest fear is about food security. Agriculture and Climate change are having the most adverse impact On the proletariat class whose total income is spent On food, water and health related items. It is estimated that due to drought there may be a Reduction of up to 20 percent in the main kharif crops Rice, pulses and oilseeds. There is a possibility of 5 Percent decline in food production in the

country and GDP will affect up to one percent. In the year 2001, Due to change in the timing of monsoon, up to 51 Percent of agricultural land has been affected. Due to Increase in temperature, the time for ripening of Rabi Crops has come. Due to rapid increase in temperature, Ears of grain appear in the crops due to which the Grains of wheat and gram crops become very thin and The productivity decreases. According to a study, if the temperature Increases by 14 oC, the production of 1 to 4 food Items may decrease by 24 to 30 percent. Whereas With the increase in the population of India, the Demand for all food items will increase, as a result Food crisis will be a serious problem for us. Climate Change will not only affect the productivity of crops but will also adversely affect their nutritional value. Flowers will bloom in fruit and vegetable crops but They will either produce very less fruits or their Nutritional value will be affected. India's world-famous rice Basmati will also not be able to escape The ill effects of climate change, its aroma will be Affected due to increase in temperature. Due to temperature rise, the sea level will rise Which will affect the livelihood of crores of people Living in coastal areas. Due to rise in water level, People's fields and lands will be swallowed by the Sea, the land will become alkaline and will not be Suitable for agriculture. Due to increase in



Temperature, the Himalayan glaciers will start receding at the rate of 30 meters every year, due to which water for farming in the states of North India is indirectly affecting the agricultural production and on the other hand indirectly in the form of loss of income and rising prices of grains. Problems are standing before us.

Due to climate change, various aspects of agriculture can be affected in the following ways

**Impact of climate change on crops:** Based on studies, agricultural scientists found that for every 10 °C increase in temperature, wheat production will reduce by 4-5 crore tonnes. Similarly, due to increase in temperature by 20 °C, paddy production will reduce by 0.75 tonnes ha<sup>-1</sup>. According to the Agriculture Department, the wheat production was estimated at 82 million tonnes, which will reduce to 81 million tonnes due to high temperatures. Climate change will not only affect the productivity of crops but will also have a negative impact on their quality. Deficiency of nutrients and protein will be found in grains, due to which human health will be affected even if a balanced diet is taken.

**Impact of climate change on soil:** For an agricultural country like India, the structure of soil and its productivity hold an important place. Increase in temperature will affect the moisture and efficiency of

the soil. Soil salinity will increase and biodiversity will decrease. On the one hand, soil erosion will increase due to natural disasters like floods, while on the other hand, barrenness will increase due to drought.

**Effect of climate change on pests and diseases:** Climate change will increase the number of pests and diseases. Warm climate helps in increasing the reproductive capacity of insects. With the increase in pests, excessive pesticides will be used to control them, which will give rise to many types of diseases in animals and humans.

**Impact of climate change on water resources:** Climate change will have the biggest impact on water resources. A serious problem of water supply will arise and the frequency of drought and floods will increase. In semi-arid areas, the dry season will be longer which will adversely affect the productivity of crops. Uncertainty of rainfall will also affect the production of crops and the depletion of water resources. Due to over-exploitation, clouds of crisis will loom over water sources. Due to high temperature and lack of rainfall, groundwater resources will be overexploited for irrigation. Due to which gradually the ground water will go down so much that exploiting it will prove to be economically unprofitable as in Punjab, Haryana and Uttar Pradesh. Development is



taking place in many Blocks of Uttar Pradesh. There are many measures to reduce the Effects of climate change on Indian agriculture, by Adopting which we can save our agriculture to some Extent from the effects of climate change. The main Measures are as follows:

**Water management in fields:** With increase in Temperature crops require more irrigation. In Such a situation, conserving moisture in the soil And collecting rain water and using it for Irrigation can be a useful and helpful step. Through watershed management, we can store Rain water and use it as irrigation. On one hand, This will provide us with irrigation facility and on the other hand, it will also help in groundwater Recharge.

**Organic and integrated farming:** On the one Hand, the use of chemical fertilizers and Pesticides in the fields reduces the productivity Of the soil, while on the other hand, their quantity Reaches the human body through the food chain. Due to which many types of diseases occur. Chemical farming also increases the emissions of Greenhouse gases. Therefore, we should give Maximum emphasis on the techniques of organic Farming. Instead of monoculture, we should do.