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**Pushendra Kumar**

Research Scholar,  
Department of Extension  
Education and Communication  
Management, Chandra Shekhar  
Azad University of Agriculture &  
Technology Kanpur, Uttar  
Pradesh, India

**Sangeeta Gupta**

Assistant Professor,  
Department of Extension  
Education and Communication  
Management, Chandra Shekhar  
Azad University of Agriculture &  
Technology Kanpur, Uttar  
Pradesh, India

**Neelma Kunwar**

Professor, Department of  
Extension Education and  
Communication Management,  
Chandra Shekhar Azad  
University of Agriculture &  
Technology Kanpur, Uttar  
Pradesh, India

**Corresponding Author:**

**Pushendra Kumar**  
Research Scholar,  
Department of Extension  
Education and Communication  
Management, Chandra Shekhar  
Azad University of Agriculture &  
Technology Kanpur, Uttar  
Pradesh, India

## Impact of climate change on various agricultural activities in India

**Pushendra Kumar, Sangeeta Gupta and Neelma Kunwar**

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### Abstract

Climate change is one of the biggest environmental challenges in all Countries in the world. Climate change refers to any change in climate over time, whether due to natural variability or/and as a result of human activity. It has become a major concern to society because of its potentially adverse impacts worldwide. There are already increasing concerns globally regarding changes in climate that are threatening to transform the livelihoods of the vulnerable population segments. Any adverse impacts on these natural resources will have repercussion on the nation's livelihood security and economy and widen the gap between the rich and the poor. Scientists predicted that climate will have the main impact on agriculture, economy and livelihood of the populations of developing countries and India is one of them, where large parts of the population depends on climate sensitive sectors like agriculture and forestry for livelihood by adversely affecting freshwater availability and quality, biodiversity and desertification, climate change tends to disproportionately affect the poorest in the society, exacerbating inequities. Impact of climate change on agriculture could result in problems like food security and may threaten the livelihood activities upon which much of the population depend. Climate change can affect crop yield (both positively and negatively), as well as the types of crops that can be grown in certain areas, by impacting agricultural inputs such as water for irrigation, amount of solar radiation that affect plant growth as well as the prevalence of pests.

**Keywords:** Agriculture activity, climate change, impact, livelihoods

### Introduction

Agriculture has an important role to play in the economic growth of an agrarian economy like that of India. Agriculture has been a way of life and continues to be the most important livelihood of the Indian masses. Agriculture productivity is sensitive to climate changes in the country and therefore its impacts need to be evaluated as climate affects many aspects of plant and animal biology, the effect of climatic elements and their extremes will significantly impact the productivity of agriculture sector and further generate negative impacts on socio-economic conditions of India where agriculture contributes little less than a quarter of the country's GDP. Climate change currently contributes to the global burden of many problems at very high confidence. Human being and earth system are exposed to climate change through changing weather patterns, temperature rise, precipitation imbalance, sea level rise and more frequent and extreme events and indirectly through change in water, air and food quality and changes in eco-systems agriculture, industry and economy. At this stage the effects may not appear big but, are projected to progressively increase in all regions of our country.

Climate change is the change in the statistical distribution of weather over periods of time that range from decades to millions of years. It is one of the key components influencing agricultural production and has large scale inputs on food production and overall economy. Agriculture is an important driver of wheels of Indian economy and also treated as backbone of the country. Thus agriculture sector needs to be improved steadily on sustainable, viable and in ecofriendly way. The present study is an attempt to explore the co-relation of impact of climate change on Agricultural sector like (Animal husbandry, Fishery, Forestry and hydrological sector) and how the Greenhouse gases, Carbon dioxide, Temperature and all meteorological phenomena affect the agricultural production. It also highlights the relationship of climate change on agriculture by relating with the crop, soil, rainfall, greenhouse gases, and temperature and how the threatening of agriculture can mitigate in a sustainable and viable way by adopting suggested agricultural measures like crop varieties, drought and flood management, and restoration of waste and degraded lands.

## Research Methodology

To complete the above objectives, by employing the appropriate research methodology, the study was conducted in district Kanpur in the year 2017-2018 and 2018-2019. Two blocks Kalyanpur and Chaubepur were selected randomly in this study. From the selected blocks, twelve villages Singhpur, Barahat, Haradaypur, Baikunthpur, Gambhirpur, Mohamadpur, Abdulpur, Amliha, Ludhori, Tighra, Bhikhripur, Bahlolpur. were selected. Twenty five respondents were selected randomly from each village. Thus, 300 respondents were selected. Dependent and independent variables, namely age, educational qualification, caste, religion, type of family, size of family, type of house, annual income, occupation, land holding, social participation, awareness, constraints, suggestions etc. were used. For analysis of collected information, suitable and appropriate statistical techniques were such as percentage, arithmetic mean, standard deviation, weighted mean, rank, correlation coefficient; chi square test, z test etc were used.

## Sampling procedure

### Locale of the study

Uttar Pradesh was chosen as locale of the study This was done with the intension that UP is a major state of the country

and farmers have an important role in agriculture.

### Selection of district

Uttar Pradesh is comprised of 75 districts. Out of these one district viz., Kanpur Nagar was purposively selected for the study. This helped in collecting the necessary information accurately and timely

### Selection of Block

There are 10 blocks in district Kanpur Nagar. Out of these 2 blocks one is Kalyanpur and other is Chaubepur were randomly selected for the study.

### Selection of Villages

Twelve villages were randomly selected from the selected blocks.

### Selection of respondents

A list of farmers belonging to different villages was prepared separately from each of the selected villages. From each list 25 respondents were selected randomly. Thus in all, 300 respondents were selected for the study purpose.

## Analysis and Findings

**Table 1:** Impact of Climate change on various agriculture activities

S. No.	Statement	Impact			Mean Score	Rank
		Agree	Undecided	Disagree		
1.	Production of various crops has decreased	27.3	40.3	32.3	1.95	III
2.	Use of traditional crop varieties has decreased	28.7	32.3	39.0	1.90	V
3.	Timing of flowering and fruiting has changed	21.3	41.3	37.3	1.84	VII
4.	Harvesting time of crops has changed	19.3	41.0	39.7	1.80	X
5.	Quality of food crops has declined	27.7	31.3	41.0	1.87	VI
6.	Cropping pattern has changed	20.7	37.3	42.0	1.79	XI
7.	Water availability has been decreased	13.3	46.0	40.7	1.73	XIII
8.	Ground water level is decreasing	17.3	46.3	36.3	1.81	IX
9.	Availability of fresh vegetables and fruits	21.3	40.0	38.7	1.83	VIII
10.	Pests and diseases have increased	24.0	45.3	30.7	1.93	IV
11.	Seasonal weeds have increased	26.7	45.0	28.3	1.98	I
12.	Area under forest cover has reduced	25.7	43.3	31.0	1.95	III
13.	Extinction of crop varieties and animals breeds	20.7	36.7	42.7	1.78	XII
14.	Increasing soil erosion	18.3	32.0	49.7	1.69	XIV
15.	Adverse effect on animal health	25.7	45.0	29.3	1.96	II

The data pertaining in table1 indicates that Impact of Climate change in various agriculture activities, 26.7 % farmers are agreed and 45.0% farmers are undecided that seasonal weeds have increased with mean score 1.98 and rank I. Followed by 25.7 % respondents agreed and 45.0 % respondents are undecided about adverse effect on animal health due to climate change with mean score 1.96 and rank II in the research study area. While 27.3 % and 25.7 % farmers are agreed that production of various crops has decreased and area under forest cover has reduced with mean score 1.95 and rank III, 24.0 % farmers are agreed and 45.3 % of farmers are undecided pests and disease have increase due to climate change with mean score 1.93 and rank IV respectively followed by 28.7 % farmers are agreed and 32.3 % are undecided that use of traditional crop varieties has decreed the climatic pattern with mean score 1.90 and stood rank V in the area. 27.7 % farmers are agree and 31.3 % are undecided about quality of food crops has declined with mean score 1.87 and rank VI, 21.3 % are agreed and 41.3 are undecided for timing of flowering and fruiting has changed with mean score 1.84 and rank VII further 21.3 % respondents are agreed and 40.0 % are undecided that availability of fresh vegetables and

fruits have decreased with mean score 1.83 and rank VIII respectively followed by 17.3 % farmers were agreed and 46.3 % farmers are undecided the ground water level is decreasing with mean score 1.81 and rank IX., 19.3 % were agreed and 41.0 % were undecided that the harvesting time of crop has changed. Further 20.7 % were agreed and 37.3 % were undecided about cropping pattern has changed due to climate change with mean score 1.79 and rank XI. 20.7 % farmers are agreed and 36.7 % were undecided that there is extinction of crop varieties animal breeds. with mean score 1.78 and rank XII, 13.3 % were agreed and 46.0 %bare undecided that water availability has been decreased with mean score 1.73 and rank XIII respectively followed by 18,3 % farmers were agreed and 32.0 % were undecided that increasing soil erosion with mean score 1.69 and rank XIV in the research study area.

## Conclusion

In the study, it was found that farmers in the study region were able to recognize that temperatures have risen, winter intensity has decreased and winter intensity has decreased. There has been a fluctuation in the pattern of rainfall. The

present analysis has therefore disproved the The hypothesis that climate change, like most of the sample population, is merely a hoax Some improvements have been made in relation to various climatic phenomena over the years. the last couple of years. At the local level, there was minimal awareness, knowledge and ability Stage for understanding, discussing, and executing long-term climate change.

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