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**Pushpendra 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:****Pushpendra Kumar**

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

## Awareness of farmers regarding climate change in India

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

**Abstract**

Climate Change is the long-term changes in characteristics of climate of a region due to astrophysical, geophysical or human-induced parametric variations. Such changes of climate at global or regional level have significant influences on life processes on earth, especially man and his living environment. One characteristic of climate, under normal circumstances is its stability and predictability which governs not only the human activities like agricultural practices, but even other living beings for example timely flowering of plants, regulating the reproductive behaviour of animals and so on. With climate change, the predictability of climate is destroyed; and that creates lots of problems to cope with by both the living world in general, but human beings, in specific.

**Keywords:** Awareness, agriculture activity, climate change, livelihoods

**Introduction**

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 eco friendly 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 Green house 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, green house 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.

## Awareness of farmers regarding Climate change

**Table 2:** Distribution of farmers according to the awareness of farmers regarding climate change N = 300

| S. No. | Statement  | Symbol | Level of awareness |                 |         | Mean Score | Rank |
|--------|--|--------|--------------------|-----------------|---------|------------|------|
|        |  |        | Fully aware        | Partially aware | Unaware |            |      |
| 1.     | Temperature is rising  | A      | 13.0               | 48.3            | 38.7    | 1.74       | VII  |
| 2.     | Uncertainty has increased in climate   | B      | 16.0               | 44.7            | 39.3    | 1.77       | V    |
| 3.     | Duration of different season has changed   | C      | 12.3               | 43.0            | 44.7    | 1.68       | XII  |
| 4.     | Inappropriate climate events are increasing  | D      | 12.0               | 39.3            | 48.7    | 1.63       | XIV  |
| 5.     | Incidence of crop damage is increasing   | E      | 12.3               | 38.3            | 49.3    | 1.63       | XIV  |
| 6.     | Pollution level is rising in the atmosphere  | F      | 11.0               | 43.3            | 45.7    | 1.65       | XIII |
| 7.     | Ice bergs are melting  | G      | 17.3               | 38.0            | 44.7    | 1.73       | VIII |
| 8.     | Natural disasters are increasing day by day  | H      | 18.0               | 36.7            | 45.3    | 1.73       | VIII |
| 9.     | Sea level is rising  | I      | 13.3               | 43.3            | 43.3    | 1.70       | X    |
| 10.    | Human health problems are increasing   | J      | 17.0               | 42.7            | 40.3    | 1.77       | V    |
| 11.    | Animal health problems are increasing  | K      | 20.0               | 42.0            | 38.0    | 1.82       | IV   |
| 12.    | Rainfall pattern is changing   | L      | 10.7               | 47.3            | 42.0    | 1.69       | XI   |
| 13.    | Increase in frost occurrence increases the scope of pests and diseases   | M      | 13.7               | 45.0            | 41.3    | 1.72       | IX   |
| 14.    | Heavy rainfall destroys irrigation water supply system   | N      | 25.7               | 40.0            | 34.3    | 1.91       | I    |
| 15.    | Unfavourable rain leads to poor quality of produce which has low market price                                    | O      | 22.3               | 46.0            | 31.7    | 1.91       | I    |
| 16.    | Rise in temperature results in large scale migration of human and animals  | P      | 18.3               | 46.0            | 35.7    | 1.83       | III  |
| 17.    | There is increase in operational cost due to increased expenditure on inputs like seeds, chemicals, labours, etc | Q      | 18.3               | 38.3            | 43.3    | 1.75       | VI   |
| 18.    | Income from agriculture is adversely affected  | R      | 24.0               | 39.3            | 36.7    | 1.87       | II   |

The data shown in the table indicates the awareness of farmers regarding climatic change, 25.7% and 22.3% of farmers were fully aware that heavy rainfall destroys irrigation water supply system and unfavourable rain leads to poor quality of produce which has low market price respectively with mean score 1.91 and rank I followed by 24.0% farmers who were fully aware and 39.3% of respondents were partially aware that income from agriculture is adversely affected due to climate change with mean score 1.87 and rank II in the study area. 18.3% were fully aware and 46.0% of them were partially aware that rise in temperature results in large scale migration of human and animals with mean score 1.83 and rank III, while 20.0% were fully and

## Analysis and Findings

**Table 1:** Awareness of farmers regarding age wise

| Age group          | Frequency | Per cent | Mean Age (years) | SD (Years) |
|--------------------|-----------|----------|------------------|------------|
| Up to 30 years     | 27        | 9.0      | 27               | 1          |
| 30 to 40 years     | 91        | 30.3     | 32               | 2          |
| 40 to 50 years     | 104       | 34.7     | 43               | 3          |
| 50 years and above | 78        | 26.0     | 57               | 3          |
| Total              | 300       | 100.0    | 42               | 10         |

The perusal of Table reveals the distribution of respondents according to age group, 34.7% farmers belonged to the 40 to 50 years age group with mean age of 43 years and standard deviation 3 years, followed by 30.3% of respondents who were found to be in age group of 30 to 40 years with mean age 32 years and standard deviation 2 years in the research study area. 26.0% farmers belonged to the age group of 50 years and above with mean age 57 years and standard deviation 3 years where as only 9.0% of respondents were of up to 30 years with mean age 27 years and standard deviation 1 year. Over all mean age of respondents was found to be 42 years and standard deviation 10 years in the study area. Age group of respondents plays an important role in their degree of awareness about climate change.

42.0% of them were partially aware and suggest animal health problems are increased due to climate change with mean score 1.82 and stood rank IV. Further 16.0% and 17.0% of farmers were fully aware about the fact that uncertainty has increased in climate and human health problems are increasing with mean score 1.77 and rank V, followed by 18.3% farmers who were fully aware and 38.3% were partially aware that there is increase in operational cost due to increased expenditure on inputs like seeds, chemicals, labours with mean score 1.75 and rank VI. While 13.0% farmers were fully aware and 48.3% of farmers were partially aware that the temperature is rising with mean score 1.74 and rank VII, 17.3% and 18.0% respondents are fully aware that ice bergs

are melting and natural disasters are increasing day by day respectively with mean score 1.73 and rank VIII. 13.7% farmers were fully aware and 45.0% are partially aware about Increase in frost occurrence that increases the scope of pests and diseases with mean score 1.72 and rank IX, 13.3% of farmers were fully aware and 43.3% of farmers were partially aware that sea level is rising with mean score 1.70 and rank X. Further 10.7% farmers were fully aware and 47.3% of farmers were partially aware about the fact that rainfall pattern is changing with mean score 1.69 and rank XI. and 12.3% farmers were fully aware and 43.0% were partially aware about the fact that duration of different seasons have changed with mean score 1.68 and rank XII, 11.0% of farmers were fully aware and 43.3% were partially aware that pollution level is rising in the atmosphere with mean score 1.65 and rank XIII. 12.0% and 12.3% farmers are fully aware that inappropriate climate events are increasing and incidence of crop damage is increasing due to climate change respectively with mean score 1.63 and stood rank XIV.

### 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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