Thematics Journal of Geography

ISSN:2277-2995
Vol-8-Issue-11-November-2019

Impact of Climate Change on Agricultural Production in India

Jayanthy.S
Assistant Professor of Management Studies
Bharath Institute of Science and Technology,
Selaiyur, Chennai, Tamil Nadu 600 073

ABSTRACT

The very important environmental problems before the World as a whole and India in particular is climate change, which is very closely associated with the global warming. They are very important on the ground that they have number of evil consequences on more or less all the spheres of the environment. It is not only India, but all the countries have been facing from the evil impacts of the climate change. It is adversely affecting the segments of the environments such as atmosphere, land, water and living things. Besides this the climate change is also adversely affecting the productive activities and sectors in the economies of the number of countries in the world as whole. It is therefore climate change has become at this moment a very importantly environmental problem of the globe as whole. And in the era of globalization and liberalization all countries of world are very closely interlinked and inter connected with the each other and India cannot be an exception to it. Hence India also has been severely affecting from the evil consequences of the climate change.

1. INTRODUCTION

It is a well known fact that at this moment also India is an agricultural country with over dependence of the people on agriculture as a means of lively hood, a major source of employment and a major population living in rural areas, whose prime economic activity is agriculture. It is therefore urgent need of the hour to examine the inter linkages and inter connections between Indian agriculture and climate as a crucial global environmental problem. It is a debatable issue, to what extent India is responsible for the international environmental problem the climate change. But the number of evil effects of climate change is being visualized in Indian economy, and its impact on Indian agriculture is very much crucial one. This demands to discuss the interconnections and linkages between climate change and agriculture in the context of India. The main objective of the paper is to identify the serious concerns of climate change and its impact on Indian agricultural sector.

CLIMATE CHANGE AND INDIAN AGRICULTURE

Agriculture sustains the livelihood of nearly 70% of the population in India. It seems obvious that any significant change in climate on a global scale will impact local agriculture, and therefore affect the world's food supply. Considerable studies have been carried out to investigate how farming might be affected in the different regions. Several uncertainties limit the accuracy of current projections. One relates to the degree of temperature increase and its geographic distribution. Another pertains to the concomitant changes likely to occur in the precipitation patterns that determine the water supply to the crops, and the evaporative demand imposed on the crops in carbon dioxide enriched atmosphere. Many climatologists predict a significant global warning in the coming decades due to rising atmospheric carbon dioxide and other greenhouse gases. As a consequence, major changes in the hydrological regimes have been also forecast to

ISSN:2277-2995
Vol-8-Issue-11-November-2019

occur. Changes in the temperature, solar radiation, and precipitation will have an effect on crop productivity and livestock agriculture.

Climate change will also have an economic impact on agriculture, including changes in farm profitability, prices, supply, demand, trade and regional comparative advantages. Agriculture is sensitive to short-term changes in weather and to seasonal, annual and longer-term variations in climate. For the long-term changes, agriculture is able to tolerate moderate variations in the climatic mean. Crop yield is the culmination of a diversified range of factors. The variations in the meteorological parameters are more of transitory in nature and have paramount influence on the agricultural systems, although other parameters, like soil characteristic, seed genetics, pest and disease and agronomic practices also do impact crop yields. Among these factors,pest and diseases cause a significant loss to world food production under different climatic conditions.

TABLE 1
AREA, PRODUCTION AND YIELD OF MAJOR CROPS IN INDIA

(Area:Production:Yield)

Crops	Area (Million ha)			Production (Million Tonnes)			Yield (Kg/ha))		
	2014-15	2015-16	Variation	2014-15	2015-16	Variation	2014-15	2015-16	Variation
Food grains	122.07	122.65	0.58	252.02	252.22	0.2	2070	2056	-14
Coarse Cereals	24.15	23.78	-0.37	42.86	37.94	-4.92	1729	1596	-133
Pulses	23.10	25.26	2.16	17.15	16.47	-0.68	744	652	-92
Oil seeds	25.73	26.13	0.40	10.37	8.59	-1.78	1037	9687	8650
Sugarcane	5.14	4.15	-0.99	362.33	352.16	-10.17	69859	71098	1239
Cotton (b)	13.06	11.87	-1.19	34.81	30.15	-4.66	461	432	-29

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation
b- Million bales of 170 kgs each.

It is revealed that in 2014-15 compared to 2015-16 not much increase area in agricultural commodities taken place. The areas under food grains have increased only 0.58 MH. Cultivated areas of Pulses and oilseeds have increased 2.16 and 0.40MH respectively. Cultivated areas of coarse cereals, sugarcane and cotton have negative growth. In the case of production of food grains only grown slightly i.e 0.2 M, On the other hand the production of coarse cereals, pulses, oilseeds, sugarcane and cotton have grown negatively. As far as growth in yield is concerned, except oil seeds and sugarcane all others crops yield have negative growth. There must be the concentration on agricultural sector with climate resilient crops in India.

CAUSES FOR CLIMATE CHANGE

The Inter-Governmental Panel on Climate Change (IPCC) was established by United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide the world with a clear view on the current state of Climate Change and its potential environmental and socio-economic consequences. IPCC defines climate change as 'a change in the state of the climate that can be identified (e.g., using statistical tests) by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity'.

ISSN:2277-2995
Vol-8-Issue-11-November-2019

NATURAL CAUSES

- Photosynthesis of the plants
- Eruption of volcanoes
- Emision of methane
- Vapor emission etc

SOCIAL CAUSES

- Green House Gases
  - Carbon Dioxide (CO_2)
  - Methane (CH_4)
  - Nitrous Oxide (N_2O)
  - Chlorofluoro Carbons (CFCs)
  - Pertluro Carbons (PFCs)
  - Sulfur hexafluoride (SF_6)
- Deforestation
- Land- Use Change
- Energy Usage
- Vehicular Usage

CLIMATE CHANGE – MITIGATION AND ADAPTATION IN AGRICULTURAL SECTOR

- Assist farmers in coping with current climatic risks by providing value-added weather services to farmers.
- Farmers can adapt to climate changes to some degree by shifting planting dates, choosing varieties with different growth duration, or changing crop rotations.
- The overall pest control strategy should be based on integrated pest management because it takes care of multiple pests in a given climatic scenario.
- Participatory and formal plant breeding to develop climate-resilient crop varieties that can tolerate higher temperatures, drought and salinity.
- Developing short-duration crop varieties that can mature before the peak heat phase set in.
- Selecting genotype in crops that have a higher per day yield potential to counter yield loss from heat-induced reduction in growing periods.
- Preventive measures for drought.
- Efficient water use such as frequent but shallow irrigation, drip and sprinkler irrigation for high value crops, irrigation at critical stages.
- Efficient and optimum use fertilizer.
- Seasonal weather forecasts could be used as a supportive measure to optimize planting and irrigation patterns.
- Provide greater coverage of weather linked agriculture-insurance.
- Intensify the food production system by improving the technology.
- Adopt resource conservation technologies such as no-tillage, laser land leveling, direct seeding of rice and crop diversification etc.
- Provide incentives to farmers for resource conservation and efficiency..
- Provide technical, institutional and financial support and subsidies.

ISSN:2277-2995
Vol-8-Issue-11-November-2019

2. CONCLUSION

His impact of climate change on Indian agriculture has created the serious things of concerns for India, which are urgently needed to deal with in absence of which it can very badly and severely affect India and its billion populations. The severe concerns of climate change on Indian agriculture are in the situation of enhancing production, productivity of agriculture climate change will adversely affect and its contribution to the development of the economy will be further marginalized. The uncertainty and variations in rainfall will hamper production especially of food grains and intensify the want for food and food security of the majority of Indians especially from the socially and economically deprived sections of the society. The climate change will adversely affect the water supply through rivers and further intensify drinking water availability and irrigation facilities for the development of the agriculture of India. Such climatic fluctuations could adversely affect agricultural sustainability resulting in unforeseen situational shortages which could also impact other economic sectors. Along with the measures and policies being implemented by the government the education, knowledge and awareness among the people about the adverse impact of climate change the active and whole hearted participation of the people and society as whole is very much necessary.

3. REFERENCES

[1] Government of India (2015-16), Economic Survey 2015-16, Ministry of Finance, New Delhi
[2] Government of India (2014-15), State of Agriculture 2014-15, Ministry of Agriculture, New Delhi
[3] Government of India (2013), Statistics Related to Climate Change - India, Statistics & Programme Implementation Government of India, New Delhi.www.mospi.gov.in
[4] Kashyapi, Hage and Kulkarni (2013), IMPACT OF CLIMATE CHANGE ON WORLD AGRICULTURE: A REVIEW, ISPRS Archives XXXVIII-8/W3 Workshop Proceedings: Impact of Climate Change on Agriculture.
[5] Aiken, Rob., Feb. 2009, Climate Change impacts on Crop Growth in the Central High Plains, Proceedings of the 21st Annual Central Plain Irrigation Conference, :14-15.
[6] Pasupalak, S., Pasupalak,.S. , April-May - 2009, Climate Change and Agriculture in Orissa, Orissa Review , :49 -52