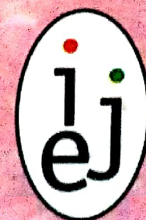


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# Climate Change and Agriculture

Dilip Pandurang Mahajan, Rajendra Ramrao Gawhale  
and Rajendra Bapurao Bhandwalkar

India is a land of agriculture and 52% population is living on Agriculture and its related businesses, Researcher has tried his level best to clarify the vagaries of nature and its effects on Agriculture production in this research paper entitled as "Climate change and Agriculture."

## INTRODUCTION

As it is said that Agriculture is the backbone of India Economy in which most of the people are depended on this sector due to its emp by ability; out seasonal nature of this sector compelled it to be called as a gambling business for its unsteady and strange features. As of today the world is being suffered from the process of climatic change and the agriculture field has not been remained untouched, day by day it too suffering from the same, and in order to these changes the production of agriculture is decreasing. Directly indirectly more than 60% of total populuce is related to this agriculture business and it occupies 13.9% of portion of total Gross Domestic product of the country so naturally it is come to be know as one of the major and crucial sector of our nation. Geographically it occupies 43% of land out of the total area of the country.

For the last 20 (Twenty) years Indian Agriculture sector has been being suffered from the vagaries of nature that brought the unrecoverable damages to this sector ;in terms of money the total loss is 79.5 billion Dollors that the country has to put up with . As being a land of agriculture and this agricultural production covers 14.6% of the total GDP of the country. In this research article researcher tries to go through every pros and cons of the impact of the climate changes on Indian Agriculture.

## Aims and Objectives of Research

- To Know the concept of climatic change.
- To Know the reasons behind climatic change.
- To take a feedback of Agricultural sector of India.
- To Know / Comprehend the effects of climatic changes on Indian Agriculture.
- To study the remedies for climatic change.

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## Hypothesis

- To study the climate change.
- Human tendency of excess use of resources is responsible for terrible climatic changes.
- Climate change has adversely affected Indian agricultural production and productivity.
- India's population is constantly increasing .

## Research Methodology

Secondary tools have been used for this dissertation. Secondary information, Anniversal books, internet, periodicals, magazines, weekly, new papers, annual reports are used as a secondary sources . These resources are related to Environment and agriculture.

## Concept of Climate Change

Climate change is the result of an increase in the accumulation of green house gases and more and more warmer temperatures. so the temperature of the earth keep increasing .

## The Present

The united Nations IPCC department has inferenced on the basis of study of climatic change since 1990-if carbon dioxide continues to grow the current rate global temperature will rise with three degree celsius by 2050 . In the twenty-first century, It will rise to 6.5 drgree celsius, so changes in climate will result in to the torrent of rain , high temperature, draught, melting of iceberg & rivers , increase in water level of sea , decrease in crops productivity, shortage of water, mal-nutrision, the diseases like Dengu & malarial that will bring rain upon the structure of society.

The 2007 was the hottest year of this century according to the study of NASA. Meteorological Dept.proclaims that the maximum temperature was recorded in chandrapur area and it was 49.6Degree. Celsius.

## Causes of Weather Changes

- The selfish nature for human being causes to arise environmental problems continuonsly.
- Extreme extraction of crude oil, coal ignition , cause to arise the accumulation of carbon - dioxide and methen in the atmosphere.
- Carbon emission from the factory farming occupies the 50% of total emission. Deforestation, use of fertilizers bring the fertility to lowest level, and in this way shakes the environment cycle that transfered into growth in temperature.
- Gree house gases contribute in temperature growth.
- All these problems are the output of mankind's genius According to Gandhiji our mother earth can fulfill the all needs of mankind but not his genius.

## EFFECTS OF CLIMATIC CHANGES ON AGRICULTURE SECTOR

The Portion of Agriculture in National Income is Decreasing.

As the livelihood of 56.60% of India's total employment depends on agriculture, the situation in the country has not been satisfactory due to moderate/low precipitation.

Years GDP (%)	Share of agricultural GDP
1950-51	56.5
1970-71	45.9
1980-81	38.3
1990-91	34
2000-01	24.7
2010-11	14.2
2011-12	13.9
2015-16	17.5

Rep. CSO & Economic Survey 2009 to 2016

The total share of Agriculture is decreasing.

The percentage of irrigation in the total cultivation of paddy and cereal crops does not appear to be satisfactory.

Years	Crops under Cultivation Irrigation Area(%)		
	Paddy	Cereals	Wheat
1971	38.4	8.8	54.3
1981	40.7	9	70.00
1991	45.5	10.5	81.1
2001	54.4	12.6	88.4

Sources: Ministry of Agriculture.

	Rabi Crop production declined		
	Crops Production(Metric ton)		difference
	2012-13	2013-14	
Udid	0.47	0.41 -	0.06
Moong	0.40	0.31 -	0.09

Sources: Ministry of Agriculture Government of India, annual Report 2013-14.

	Crops Production (Million Tons)		
	2014-15	2015-16	2016-17
Sugarcane	362.33	348.45	306.72
Cotton	34.80	30.01	33.09
Jute	11.13	10.52	10.60

Sources: Annual Report 2017-18 Ministry of Agriculture.

### Effect of Climate Change on Precipitation and Development

Changes in rainfall also affect the agricultural development of the Country.

Years	Rain Fall (Precipitation)%	Agricultural Development Rate
2007-08	106	5.5
2008-09	98	0.4
2009-10	78	1.7
2010-11	102	7.0
2011-12	109	2.8

Sources: Indian Metrological Department & Economic Survey 2010-11

### Climate Change has an impact on inflation

Years	Average & distribution of precipitaition	Average Wholesale Price Index
2007-08	6	4.5
2008-09	-2	8
2009-10	-22	3.6
2010-11	2	8.6
2011-12	1	8.8

Precipitation is not satisfactory due to Climate change, Prices are rising due to food shortage in the economy & demand is higher. Available stocks of cereals increase prices.

### DAMAGE TO CROPS

Plants prepare their food through photosynthetic processes. It requires sunlight and requires 400 Nanometer to 650 nanometer of light. If the light force is higher then it needs it damages the crops. If the temperature goes up more the 35° c then it can bring damages to the crops.

### Water Demand Increases

The plants are in need of more water (twicely or more than twice than the regular demand) due to the environmental changes.

### Glaciers Melt

According to the study of Harward university during 1982-2006 the temperature has been increased by 1.5 drgree °C and also increate in global temperature by 0.6 degree °C Due to the hike in temperature resulted into the melting of Himalayean glaciess that will naturally transform into flaned & flyed like situation it India continent. The crops in these rivers basin will be flooded and destroyed by floods.

### Decrease in Production

According to Leaste Brown an environmentalists if there is increase in temperature by 01 degree °C in global temperature will cause to decrease the cereals peoduction by 10% .In the year 2002 the agriculture production would be deducted by five million doller, and It was presumption It affected the crops productions.

Climate change has to deal with uncontrollable weather conditions , such as falling rain & falling untimely. The result of all this is the decline in crop production and productivity.

Climate change and the economy are being adversely affected. According to British Prime Minister Tony, Blair Climate change damages clase to 20% of the world's GDP each

year. As the Indian economy relies on indirect agriculture, dry farming is entirely dependent on the climate change has even more of an undesirable effect.

Climate change increases the incidence of pests and diseases on crops Dr. Prasama Shamlu, scientist in G.B Pant Himalayan Development Institution says that "Rising temperatures lead to changes in the agricultural season as the incidence of new pests and disease increases.

Climate change has made apple farming a threat. Due to the low levels of creativity over the warm climate, 70% of the apple is planted and production has also decreased. The sudden change in temperature affected quality due to climate change.

### Remedies to Control the Atmospheric Changes

- The consumption of commodities and energy resources should be limited.
- The impact of green houses should be minimized.
- Polluting disaster in industrial farming should be avoided.
- Use of the environment friendly energy technologies, should be increased. Ohio university of America has been succeeded in purifying and controlling 90% of carbon dioxide after the burning of coal in the furnace for the sake of energy or electricity production.
- The Process of deforestation should be controlled at any cost. The tree plantation process/ programme should be accelerated and it should be made a motto for the environment safety.
- This is a kyota protocol and a carbon trade dealt with the united nations as a solution to climate change. The main purpose of this agreement is to reduce climate change by reducing green house gas emissions. Each tonne of emissions reduced will be given a certificate from the UN.

### CONCLUSION

Indian agriculture is dependent on nature and is constantly being subjected to climatic irregularities. Due to industrialization, dry and wet droughts occur for fifty years or more, but due to climate change, drought scenario is occurring every one to two years. As a result, India's macro-national income is complementary to business, agricultural development and agricultural production. It is important to increase water storage by adopting climate change in a positive way. The government needs to keep in mind that increasing water reserves can increase the production of agricultural product and increase the country's economic growth rate and prevent price increase.

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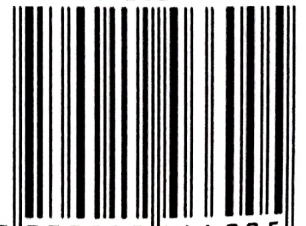


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