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## To study about determined of climate change in district Chhartarpur (M.P.)

**Veenapani Shrivastava, Uttam Kumar Tripathi, Kamlesh Ahirwar, Rajiv Singh and Aradhana Varma**

**Abstract**

Climate change is a statistical distribution of weather patterns when that change last for an extended period of time (i.e. decades to millions of year) climate change may refer to a change in average weather conditions, or in the time variation of weather within the context of longer – term average condition. Normal rainfall total 1074.9 but 2011 actual rainfall 1231.4, 2012 actual rainfall 930.5, 2013 actual rainfall 1633.1, 2014 actual rainfall 772.1, 2015 actual rainfall 640.0 and 2016 actual rainfall 1437.0. Every year effect of climate change.

**Keywords:** determined, climate change

**Introduction**

Human-caused climate change represents one of the great environmental challenges of our time. To appreciate its societal, environmental, and economic implications, one must appreciate the basic underlying science. This course seeks to first lay down the fundamental scientific principles behind climate change and global warming. These principles involve aspects of atmospheric science and meteorology, as well as aspects of other areas of the physical and biological sciences. With a firm grounding in the basic science, we go on to explore other issues involving climate change impacts and the issue of *mitigation* — that is, solutions to dealing with the challenges presented by climate change. In the process, we will learn how to do basic computations and to use theoretical models of the climate system of varying complexity to address questions regarding future climate change. Students will explore the impacts of various alternative greenhouse gas emissions scenarios and investigate policies that would allow for appropriate stabilization of future greenhouse gas concentrations. The structure of the course roughly parallels the treatment of the subject matter by the reports of the *Intergovernmental Panel on Climate Change (IPCC)*, focusing first on the basic science, then the future projections and their potential impacts, and finally issues involving adaptation, vulnerability, and mitigation. We will use a variety of tools to inform our understanding of these topics, including digital video, audio, simulation models, and virtual field trips to online data resources. In this first lesson, we are going to define *climate* and *climate change*, as well as the closely related matter of *global warming*. We will introduce the components of the climate system (the atmosphere, ocean, cry sphere, and biosphere). We will also briefly introduce some of the other key scientific concepts: atmospheric structure and composition, energy balance, atmospheric and oceanic circulation. We will draw a distinction between natural and human impacts on climate, and we will review the science behind greenhouse gases and the greenhouse effect. We will explore the crucial topic of feedback mechanisms, including important emerging knowledge regarding *carbon cycle feedbacks*. Finally, we will begin to explore a number of important overriding themes such as the role of scientific uncertainty in decision making. {1}

**Consolidated Report of TDC- (2011-2016)****1. Village information**

Name of the village and district	Chokdha, Nowgong, Chhatarpur
No. of households	212
Total cultivated area (ha)	242.4 ha
Area under rainfed cultivation (ha)	42 ha
Major soil type	sandy soil
Climatic vulnerability of the village and the extent area affected (explain) during the study period(2011-16)	Drought condition

**Rainfall received (mm)**

Month	Normal rainfall (mm)	Actual-2011	Actual-2012	Actual -2013	Actual-2014	Actual-2015	Actual 2016
January	16.5	0.0	0.0	70.0	48.5	15.4	0.1
February	14.4	4.0	35.5	75.4	13.1	2.1	-
March	7.9	0.0	0.0	24.0	68.7	14.7	-
April	4.8	0.0	0.0	6.3	35.9	-	-
May	6.9	0.0	0.0	0.0	0.0	-	-
June	95.5	14.4	10.9	326.6	40.0	128.5	88.1
July	373.6	345.9	303.0	352.0	231.8	228.1	640.1
August	336.8	246.6	433.3	587.3	164.2	188.0	616.0
September	170.6	189.1	147.8	34.1	111.5	32.8	82.6
October	25.7	28.5	0.0	156.3	26.0	19.2	10.1
November	15.2	19.8	0.0	0.0	0.0	6.3	0.0
December	7.0	0.0	0.0	1.1	32.4	4.9	0.0
Total	1074.9	1231.4	930.5	1633.1	772.1	640.0	1437.0

\*Indicate the no. of rainy days in parenthesis Source (D.D.A, OFFICE CHHATRPUR)

Describe the variability in rainfall experienced during the crop growing period from 2011-2016 (for example: the occurrence of dry spells, high rainfall events causing flooding and other events, such as hail storm, cold wave, heat wave, etc)

**4 Natural Resource Management**

Year wise results of the demonstration taken up (Please furnish the average values of the adopted farmers in the below tables year wise and the individual farmer wise data as annexure separately)

**Results: 2011 (Number of farmers involved: 137)**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Improved practice	Soybean	20q	40000	30000	3.00
	Groundnut	11q	33000	22000	2.00
	Black gram	12q	30000	22500	3.00
	Sesame	5q	25000	21000	3.5
Farmer's practice	Soybean	17q	34000	25000	2.77
	Groundnut	9.5q	28500	17500	1.59
	Black gram	10q	25000	18000	2.5
	Sesame	4q	22600	17000	3.0

\*Improved practice can be critical irrigation to kharif crop or bringing additional area during rabi

**Results: 2012 (Number of farmers involved: 85)**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Improved practice	Soybean	6q	27000	18000	2.00
	Groundnut	3q	36000	28500	3.8
	Black gram	15q	27625	15625	1.3
	Sesame	15q	17500	7500	0.66
Farmer's practice	Soybean	9q	18000	10000	1.25
	Groundnut	6q	18000	11000	1.57
	Black gram	21.5q	19500	8500	0.77
	Sesame	17.5q	15000	6000	0.25

\*Improved practice can be critical irrigation to kharif crop and bringing additional area during rabi

**Results: 2013 (Number of farmers involved: 170)**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Improved practice	Black gram	2.85	9690	690	1.07
	sesame	2.83	32545	25043	4.3
	soybean	4.05	11340	1740	1.18
	wheat	21.4	30115	18642	2.73
	barley	19.44	18000	7500	1.5
Farmer's practice	Black gram	2.47	8398	398	1.04
	sesame	2.27	26105	19105	3.72
	soybean	3.4	9520	370	1.04
	wheat	17.8	22120	12500	2.01
	barley	17.22	1500	6000	1.25

\*Improved practice can be critical irrigation to kharif crop and bringing additional area during rabi

**Results: 2014 (Number of farmers involved: 195)**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Improved practice	sesame	5	35000	19500	2.26
	black gram	11.5	43900	29700	3.12
	soybean	8	22400	3400	1.17
	groundnut	10	38000	24000	2.71
	mustered	5	15000	2000	1.15
	barley	16	22400	10400	1.86
	wheat	15	23250	8250	1.55
Farmer's practice	sesame	3.5	32000	17000	2.06
	black gram	10	41000	27000	2.92
	soybean	5	20000	2500	1.05
	groundnut	8	34000	20000	2.42
	mustered	1.2	12000	1000	0.92
	barley	12	18200	7800	1.51
	wheat	11	20110	6700	1.34

\* Improved practice can be critical irrigation to kharif crop and bringing additional area during rabi

**Results: 2015 (Number of farmers involved: 25)**

Treatment	crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Improved practice	Barley	28	36400	12400	2.9
	Wheat	25.4	40640	15640	2.62
Farmer's practice	Barley	18.5	32200	8960	2.57
	Wheat	18.6	36600	10250	2.36

\* Improved practice can be critical irrigation to kharif crop and bringing additional area during rabi

**Results: 2016 (Number of farmers involved: 11)**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Improved practice	black gram	6	41000	24500	2.48
Farmer's practice	sesame	4	36000	18000	2.18

\* Improved practice can be critical irrigation to kharif crop and bringing additional area during rabi

**Extent of spread/adoption of interventions year wise**

	2011	2012	2013	2014	2015	2016
No. of units existing in the village	1	1	1	1	1	2
Area benefitted in the village (ha)	53ha	34ha	68ha	69.6ha	10ha	4.4ha

Similarly the summary of other water harvesting interventions may be furnished in the same format

**Extent of spread/adoption of interventions year wise**

	2011	2012	2013	2014	2015	2016
No. of farmers adopting in the village	137	85	170	195	25	11
Area benefitted in the village (ha)	53ha	34ha	68ha	69.6ha	10ha	4.4ha

Similarly the summary of other *in-situ* measures demonstrated may be furnished in the same format

**Results: 2011**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Farmer's practice	Soybean	20q	40000	30000	3.00
	Groundnut	11q	33000	22000	2.00
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**Results: 2016**

Treatment	Crop	Seed yield (Kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
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Farmer's practice	sesame	4	36000	18000	2.18

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No. of farmers adopting in the village	137	85	170	195	25	11
Area benefitted in the village (ha)	53ha	34ha	68ha	69.6ha	10ha	4.4ha

### Recommendation

All farmers using rain fed varieties of crops.

- All people should be save the water by using the improve irrigation technique such as rain gun, sprinkler, drip irrigation etc.
- People should be adopted horticulture and improved agriculture according to soil and climate and skill development and use post harvest technology and food processing and gain in economic source and develop entrepreneurship.
- All farmers should use hydro gel in horticulture cropping system for saving water and also recommended rain fed area.
- People should be adopted agro frosty system.

### Summary and Conclusion

According to consolidated report of TDC (2011-2016) district and village Chokdha Nowgong Chhatarpur have total household 212 and total cultivated area 242.4 ha under rain fed cultivation 142 ha sandy soil and drought condition Chhatarpur district on rainfall lowest in normal rainfall according to year to year is lowest and small time is much high level of rain fall is a effected on climate and lost of crops and horticulture cropping also face in lowest poverty line according TDC report normal rain fall 1074.9 according 2011 rainfall actual 1231.4 and 2012 actual rainfall 930.5, 2013 1633.1, 2014 772.1 2015 240.0 and 2016 1437.0 rainfall experienced during the crop growing period from 2011-16 (for example the assurance of dory spells, high are rainfall events causing flooding and other events, such as hail storm, cold wave, heat wave etc. Improved practice can be critical irrigation to Kharif crop or bringing additional area during Rabi. It observed that the KVK intervention improved practices are better than farmers practices.

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