

Climate change impact on Agriculture leads to loss in India's GDP

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Rising temperature affects flowering and leads to pests and disease buildup. Flood and excess rain over a short duration of time cause extensive damage to crops. Extreme weather events have caught attention of agrarian experts and scientists alike and they are now focusing on natural farming to arrest the impacts of climate change.

Impact of climate change on Agriculture:

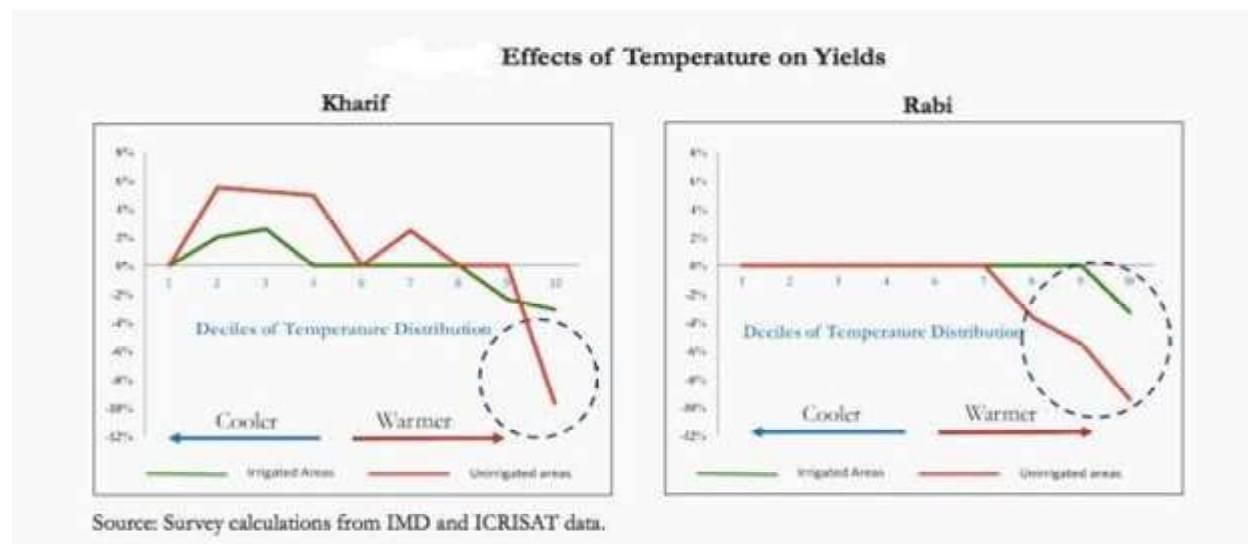
While speaking at the Natural Farming Summit hosted by the Sri Sri Institute of Agricultural Sciences & Technology Trust (SSIAT) in Bangalore from May 9-10, B. Venkateshwarlu, former director at International Central Research Institute for Dry land Agriculture (CRIDA), Hyderabad, said, "Climate change affects all the three aspects of food security: availability, access and absorption. When production decreases, availability of food decreases. Climate change hits poor the most. They don't have income

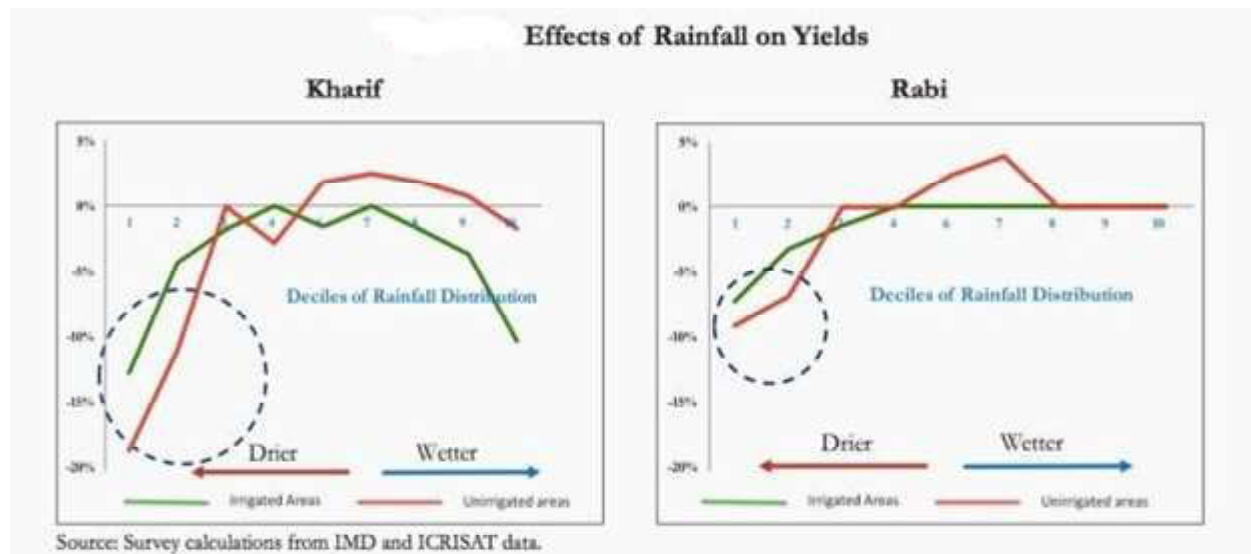
to buy the food, so their access to it is affected. This, in turn, has an impact on health and affects absorption."

According to him, climate change has about 4-9 per cent impact on agriculture each year. As agriculture contributes 15 per cent to India's GDP, climate change presumably causes about 1.5 per cent loss in GDP.

How different crops react to climate change:

Highlighting the impact of climate change on crops, he explained how rice, wheat, maize and sorghum are the worst hit by this phenomenon. By 2030, rice and wheat are likely to see about 6-10 per cent decrease in yields. He also gave examples of crops like potatoes, soybean, chickpea and mustard, on which climate change will have a neutral or positive impact.





The economic survey noted that such impact is more adverse in unirrigated lands compared with irrigated areas. “Extreme shocks have highly divergent effects between unirrigated and irrigated areas (and consequently between crops that are dependent on rainfall), almost twice as high in the former compared with the latter,” the survey said.

Economic survey 2018 given the fact that around 52% (73.2 million hectares area of a total 141.4 million hectares net sown area) of India’s total land under agriculture is still unirrigated and rain-fed, the sector could be in trouble.

The change in agricultural productivity patterns as a result of climate change could reduce annual agricultural incomes by between 15% and 18% on

average, and between 20% and 25% particularly for unirrigated areas, the survey says.

Climate change models, such as the ones developed by the Intergovernmental Panel on Climate Change (IPCC), predict that temperatures in India are likely to rise by between 3 degrees Celsius and 4 degrees Celsius by the end of the 21st century. “These predictions, combined with our regression estimates, imply that in the absence of any adaptation by farmers and any changes in policy (such as irrigation), farm incomes will be lower by around 12% on an average in the coming years, and unirrigated areas will be the most severely affected, with potential losses amounting to 18% of annual revenue,” the survey said. (Table:1)

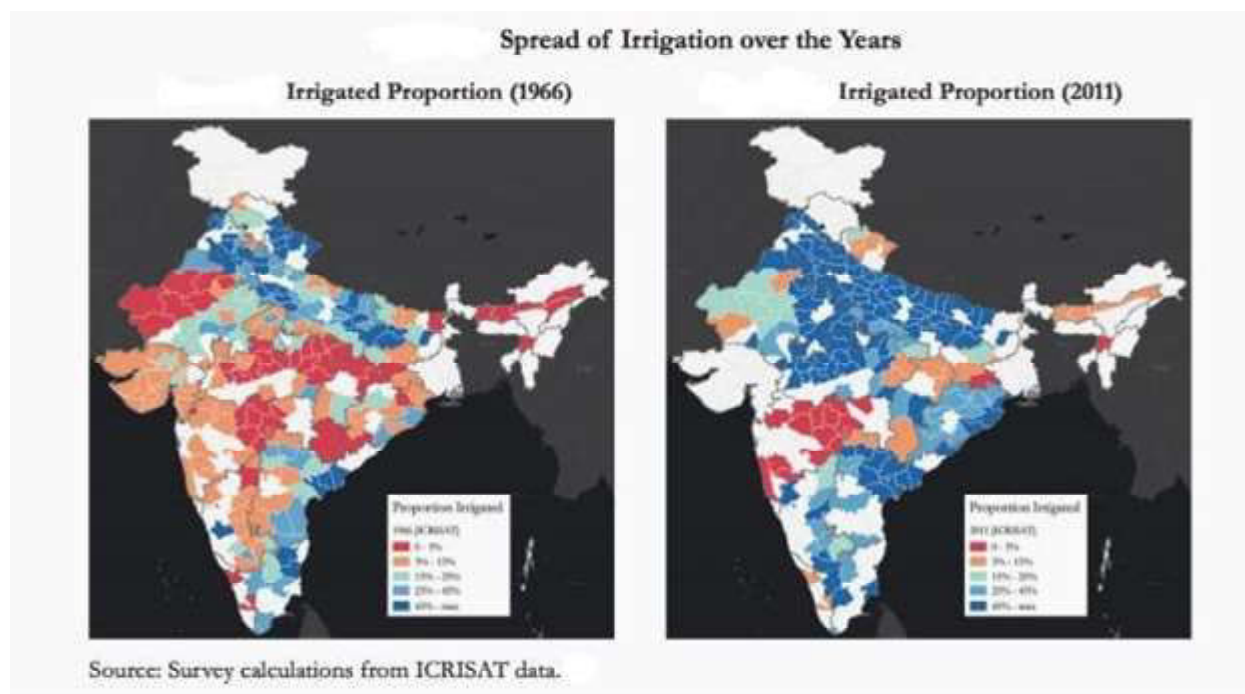
Table 1. Impact of Weather Shocks on Agricultural Yields
(percentage decline in response to temperature increase and rainfall decrease)

	Extreme Temperature Shocks	Extreme Rainfall Shocks
Average Kharif	4.0%	12.8%
Kharif, Irrigated	2.7%	6.2%
Kharif, Unirrigated	7.0%	14.7%
Average Rabi	4.7%	6.7%
Rabi, Irrigated	3.0%	4.1%
Rabi, Unirrigated	7.6%	8.6%

Source: Survey calculations.

The Indian government, therefore, intends to focus on improving irrigation in India. “Minimizing susceptibility to climate change requires drastically extending irrigation via efficient drip and sprinkler

technologies (realizing ‘more crop for every drop’), and replacing un-targeted subsidies in power and fertilizer by direct income support,” the survey suggested.



Adapting to global warming:

Emphasizing the need to convince the government that we can produce enough food using natural farming, he called for using climate-tolerant crop varieties like the Swarna rice. This variety of rice, considered tolerant to water logging, used to be grown in India in the past. The important mitigation options, according to him, include:

- Efficient water and nutrient management options to enhance use efficiency
- Evaluation of carbon sequestration potential of different land use systems
- Understanding opportunities offered by conservation agriculture and agro-forestry

Identifying cost-effective methane emission reduction practices in ruminants and in rice paddy.