

Climatic Change Impacts on Foodgrain Production in India

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Abstract

The paper assesses the impact of climate change on food supply using a simulation model. Climatic and socio-economic factors that are key drivers for determining food production in the agriculture sector and its response to climate change impacts are interacted to provide alternative scenarios. The model is run using data for India, simulating scenarios till 2050. Production of foodgrains is sensitive to changes in climatic factors which affect yield and area under cultivation. Adverse implications result with climate change losses ranging from 15 to 38 million tonne of foodgrain. A temperature rise of 2 °C or more for 7 states by 2050 leads to shortfalls in production across crop categories. In aggregate, across crops and states, even under optimistic assumptions of growth, incorporation of climate change impacts can convert a surplus of 19.1 million tonne to a deficit of 18 million tonne. Losses in production of over 11% by 2050 are attributable to climate change with consequent implications for shortfalls from targeted consumption levels and increased imports. While scenarios differ in their implications with regard to non-climate factors, adaptation through improvements in water use efficiency can be an important strategy.