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Changing Climate – Changing Livelihood: Farmer's Perceptions and Adaptation Strategies, Indian Watershed Context

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Abstract

Climate change impacts are disproportionately distributed across the temperate and tropical regions. Most of the countries in the tropics and subtropics will be the hardest hit by climate change with a decline in agricultural production, increased livelihood insecurity, and downward spiral in human development indicators. Moreover, these countries own large populations of poor smallholder farmers who live in a 'complex, diverse and risk-prone' system, which adds to their vulnerability. For example, India's smallholder farmers comprise 78 % of the country's farmers and they produce 41 % of the country's foodgrains. As climate change impacts are increasingly observed and felt by these smallholders, there is an urgent need to identify the factors that enhance the adaptive capacity of farmers, their households and communities. We, therefore, use the recently developed climate vulnerability index for rainfed areas based on data from 215 household surveys in three different watershed smallholder communities in Kerala, India to analyse the farmer's vulnerability to climate change. We are interested in examining how households perceive climate change, how they adapt their behaviour in response to perceived changes in climate and what the main drivers in influencing the household's choices of adaption measures are. The results reveal that 85.3 % of the farmers perceive 'medium-high' level of considerable rise in temperature while 66.1 % of them perceive erratic monsoon occurrence over the past ten years. We find that there exists a considerable variation for the three regions when it comes to the actual use of adaptation strategies but that, in general, the households are using various adaptation methods simultaneously. Results of a binary regression model reveal that gender, age of the household head, household size, net sown area, household assets and poverty status of the household significantly influence the choices of adaptation measures used to cope with climate change.

Keywords: Adaptation strategies, climate change, rainfed, smallholder farmers, watershed

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