Abstract

The literature on the effects of climate change suggests that developing countries like India are likely to be severely affected by the rapidly changing climatic conditions as livelihoods of majority of people depend largely on climate-sensitive resources such as agricultural land, livestock husbandry, fuel wood, wild herbs etc. Climate change can adversely affect the stock as well as the quality of these natural resources and limit the livelihood options for the rural households. The degree of impacts of climate change may vary depending upon the effectiveness of the adaptation strategies. Therefore, understanding farmers' perception of, and adaptation to climate change will be of immense help to design policies for coping with changing climatic conditions. The present study makes an attempt to examine farmers' perception about climate change, identify and analyze the factors that determine the choice of adaptation to the changing climate, and examine the effectiveness of adaptation measures to cope with changing climate in Assam, one of the worst affected Indian states due to climate change. The study uses a "bottom-up" approach, which seeks to gain insights from the farmers themselves based on a farm household survey. A semi-structured questionnaire is used to elicit information related to farmers' perception of, and adaptation to climate change along with other data relating to various socio-economic-demographic characteristics of households. Secondary data are collected from the Meteorological Department and other government records to examine how farmers' perception corresponds with climate data recorded at meteorological stations. Heckman Probit model and multinomial logit model are used to identify the determinants of adaptation to climate change and variability. The effectiveness of adaptation measures are measured by calculating coefficient of variation of agricultural yields. The result indicates that farmers' in Assam tend to perceive climate change better. A number of socio-economic and institutional factors such as age, gender, weather information and provision of irrigation are found to influence farmers' perceptions of climate change. Moreover, the analysis of farmers 'adaptation methods to climate change reveals that all the farmers' who perceive climate change do not necessarily adapt to it. Instead, several other factors like age, wealth, education, household size, agricultural extension services, institutional credit facility, etc. affect farmers' adaptation strategy to climate change. In addition, farmers' in Assam were observed to adopt multiple adaptation measures such as crop switching, use of more pesticides/insecticides, soil conservation, irrigation, livestock rearing, migration, non-farm activities etc. in order to cope with climate change. But, all adaptation measures were not equally effective in reducing variability of yield in face of frequent floods and droughts. The result of the logistic regression model indicates that irrigation and shift from farm to non-farm activities have played critical role in effective adaptation. The research outcomes suggest that provision of adequate physical as well as financial resources to farmers is the key to counter the adverse effects of climate change. In addition, access to education, extension services, and creating greater awareness amongst farmers will go no way to adapt to changing climatic condition.

Key Words: Climate Change, Vulnerability, Agriculture, Perception, Adaptation, Assam.