Assessment of Impacts of Climate Change and Adaptation Measures for Maize Production in East Sikkim, India

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ABSTRACT

An investigation was carried out to assess the impacts of climate change on rainfed maize yield using a yield response to water stress model (AquaCrop) and to identify suitable adaptation options to minimize the negative impacts on maize yield in East Sikkim, North East India. Crop management and yield data was collected from the field experimental plots for calibration and validation of the model for the study area. The future climate data was developed for two IPCC emission scenarios A2 and B2 based on the global climate model HadCM3 with downscaling of climate to finer spatial resolution using the statistical downscaling model, SDSM. The impact study revealed that there is an expected reduction in maize yield of 12.8, 28.3 and 33.9% for the A2 scenario and 7.5, 19.9 and 29.9% for the B2 scenario during 2012-40, 2041-70 and 2071-99 respectively compared to the average yield simulated during the period of 1961-1990 with observed climate data. The maize yield of same variety under future climate can be maintained or improved from current level by changing planting dates, providing supplement irrigation and managing optimum nutrient.

Keywords: *Climate change, Crop modeling, agro-adaptation, North East India, IPCC scenarios*