POTENTIAL CLIMATE CHANGE IMPACTS ON SUITABILITY OF RAINFED SUGARCANE GROWING AREAS IN SRI LANKA

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Climate change causes shifts in areas suitable for cultivation of a wide range of crops. Sugarcane is a perennial crop currently grown in the intermediate and dry zones in Sri Lanka. However, there may be shifts in the potential areas for sugarcane cultivation due to climate change. This study thus attempted to analyse the suitability of rain-fed areas for sugarcane cultivation in Sri Lanka under the current and future projected climate. Crop suitability assessment tool (Ecocrop model) was used to predict the climatically-suitable areas for sugarcane based on the present and future climate scenarios. Monthly minimum and maximum temperature, monthly mean rainfall data, and crop data were used as inputs to the model. Climate data of the baseline period (1971 – 2000) were evaluated against the projected climate data in 2030 and 2050 under a Representative Concentration Pathway (RCP) of 4.5 and 8.5 emission scenarios. The baseline data were collected from the Department of Meteorology, Sri Lanka, while future climate prediction grids were extracted from the fourth version of the Community Climate System Model (CCSM4) developed by the institute of National Centre for Atmospheric Research. According to the results, the area belongs to the "excellent" suitability for rain-fed sugarcane cultivation is 45% of the total land area under the baseline conditions. This will increase to 62% and 67% in 2030 under RCP 4.5, and 8.5, respectively. These percentages will be 79 and 68 in 2050 under the same RCPs, respectively. Thus, the projected climate may have a positive effect on suitability for sugarcane cultivation. This information can be used by the policymakers when developing plans for future agricultural development.

Keywords: Climate change, Crop suitability, Rainfall, Sugarcane, Temperature