

Abstract

Climate change shows the highest risk of food security worldwide for agricultural communities, especially those households merely dependent on agriculture. Arid and semiarid regions face problems in the agricultural sector, usually in developing countries, as they lack resources and adaptation strategies. Therefore, this study aims to examine the climate-induced risks of food scarcity in agriculture-dependent households in the district of Sheikhupura, a metropolitan city in Pakistan. Data was collected from 384 households using a multistage purposive and random sampling technique. The vulnerability of agriculture-dependent households was quantified through a composite index approach. The food security index revealed that 32% of households had access to enough food, while 68% were food scarce. The analysis of different Sheikhupura Tehsils, including Sharaqpur, Ferozwala, and Muridke, revealed that 52%, 18%, and 27.7% of households were food secure, respectively. The climate change vulnerability index (CCVI 0.65) showed that farmers in the selected region were particularly vulnerable to climate change. The vulnerability analysis of different study regions revealed that the farming community of Ferozwala was more vulnerable (0.85) than Sharaqpur (0.44) and Muridke (0.64). Furthermore, the meteorological data analysis revealed that the temperature had risen by 1°C with an unpredictable rainfall pattern. The land use and land cover change analysis predicted that trees and crop cover had depleted between 2012 and 2022. An inverse relation between food security and climate change was shown in the present study's findings. Despite the variation in farm performance, regional focus must be given to prevent production losses. In addition, efficient legislation should be implemented to encourage agricultural operations that assist people in adapting to climate change.