

Abstract

Climatic changes in Pakistan adversely affect the rice and wheat crops and undermine the food availability and sustenance of millions of agricultural households. The current study assesses the farmer's risk perception and associated adaptations to climate change in the Narowal District of Punjab, Pakistan. The methodology includes 28 indicators covering the climatic, social, financial, physical, and human attributes of households. A mixed method approach consisted of 300 rice-wheat farmers and 2 focus group discussions (FGDs) were conducted covering twenty- four (24) villages for vulnerability and adaptation assessment. Temperature and rainfall data for the last 20 years was collected from Pakistan Meteorological Department to ratify farmers' response to climate. A standardized risk perception index was developed to evaluate the farmer's climate vulnerability following the IPCC Climate Vulnerability Index (IPCC-CVI). In addition, based on the sustainable livelihood framework, the Analytical Hierarchy Process (SLF-AHP) was used to assess farmers' adaptive capacity. The comparative analysis of district Narowal showed that Tehsil Narowal was more vulnerable with a CVI score of 0.26 than Tehsil Shakargarh with an aggregated value of 0.19. Tehsil Narowal had a high adaptive capacity value of 0.48 while Tehsil Shakargarh with an adaptive capacity index of 0.36 respectively. Climate- smart adaptation practices like changing the sowing dates, leaving land as fallow, supplementary irrigation, and plantation of short duration varieties followed by the switched from the cultivation of cereals crops to cash crops like sugarcane, per millet, and watermelon enhanced rice-wheat farmers' resilience and lowers the vulnerability.