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Water and well-being: How access to irrigation influences food security among smallholder farmers

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Abstract

Access to water is a critical part of nearly all aspects of sustainable development. In the Indian context, over 50 per cent of the country's net sown area is rainfed and around 78 percent of India's rainfall is received during the monsoon season. Agriculture in the country continues to be heavily rainfall dependent. However, over the years, climate change has had a direct impact on the onset of monsoon in India which in turn has led to significant shifts in farming practices. Further, such shifts have a bearing on the nutrition and food security of the vast majority of rural farming households in the country. Recent studies also suggest that as much as 80 percent of smallholder farmers in India will be affected by climate hazards by 2050 and vast areas of land that are currently under rainfed cultivation could become non-arable exacerbating food insecurity. We use data from a large-scale survey with over 2000 farming households in Gujarat, a large state in western part of India with around two-third population involved in agriculture and allied activities, to understand the relationship between irrigation and household food security towards enhancing resilience of smallholder farmers in India. Gujarat is also one of the six Indian states that have been identified as extremely vulnerable to climate change impacts. The primary respondents are women farmers who are affiliated with Self-Employed Women's Association (SEWA), one of the largest women's trade unions in the country. We use linear probability estimation to look at what determines access to irrigation and the relationship between access to irrigation facilities and crop diversity and household food security. We administered the FAO's Food Insecurity Experience Scale (FIES) to assess household food security. We find that ownership of irrigation pumps is positively associated with crop diversity. Further, households that reported ownership of pumps are less likely to suffer from food insecurity. Our results highlight the need for interventions aimed at leveraging small-scale irrigation to enhance resilience and improve nutrition and health outcomes.

Keywords: Climate change, food security, India, irrigation, resilience, women farmers

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