

Challenges and Opportunities of Smallholder Upland Agricultural Systems Amidst Climate Risks in Tropical Asia—The Case of Northern Sri Lanka

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Abstract

Upland's annual cropping systems are an important livelihood activity in tropical countries like Sri Lanka. This study employs a case study approach, integrating a questionnaire survey, focus group discussions and key-informant interviews to understand the vulnerabilities of this system to climate risks, accounting for both challenges and opportunities. The findings reveal that climate change-induced inclement weather, pests and diseases, labour costs and scarcity and marketing challenges are the primary constraints faced by farmers in this system. Heavy reliance on agrochemicals and unsustainable water use is evident, with potential implications for groundwater contamination and consumer health. Diversity of crops and adopting a range of good agricultural practices could be considered opportunities in this system. Nonetheless, these opportunities must be capitalised to minimise the dependency on non-renewable and unsustainable inputs and enhance eco-friendly practices. Perception and awareness of climate change impacts have increased among farmers. However, implementing field-level adaptations for climate change has not been adequate, except for planting drought-tolerant crop species in dry seasons. This is mainly due to the lack of knowledge, expertise and technologies available to farmers. The study found that when

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