

ADOPTION STAGES OF CLIMATE ADAPTATION PRACTICES AMONG SMALLHOLDER RICE FARMERS: A CASE STUDY IN ANURADHAPURA DISTRICT, SRI LANKA

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Adapting to climate change is critical for rice farmers in the dry zone of Sri Lanka, yet the adoption of climate adaptation practices remains limited. This study examined the adoption as a dynamic behavioral process using the trans-theoretical model, focusing on smallholder rice farmers under minor irrigation systems and rain-fed conditions in the climatically vulnerable *Horowpothana* Divisional Secretariat Division in the Anuradhapura district. Five context-specific on-farm adaptation practices prioritized by field-level extension officers based on three effectiveness criteria as yield, quality, and adaptability, and later validated by farmers were considered for the analysis. Data were collected from 155 rice-farming households using questionnaire surveys, key-personal interviews, and focus group discussions, and analyzed using descriptive and ordinal logistic regression methods. The five prioritized climate adaptation practices included quality seed paddy of climate-smart varieties, timely land preparation, integrated weed management, integrated pest management, and the parachute method. Farmers were predominantly in the preparation stage for quality seed paddy (66%), integrated weed management (52%), integrated pest management (52%), and the parachute method (37%), while land preparation was primarily in the maintenance stage (62%). Statistically significant ($p<0.05$) factors influencing adoption included household income, climate risk perception, response efficacy, self-efficacy, available family labor, and cultivated extent, with positive or negative effects varying across practices. Key barriers to adoption stages included lack of time (30%) in precontemplation, technical knowledge gaps (31%) in contemplation and preparation, and economic constraints in action (31%) and maintenance stages (54%). The findings highlight the importance of tailored interventions, addressing economic and knowledge barriers, and enhancing efficacy perceptions to facilitate adoption across stages. This research provides critical insights for policymakers and extension services to promote climate adaptation practices and resilience in rice cultivation amidst climate challenges.

Keywords: Adaptability, Climate-smart varieties, Perceived barriers, Trans-theoretical model