

**FARMER'S PERCEPTION ON THE USE AND RELIABILITY OF
SCIENTIFIC WEATHER FORECASTING FOR CROP PRODUCTION IN
PALUGASWEWA TANK CASCADE SYSTEM, SRI LANKA**

R.R.S.P. Rajakaruna¹, N.S. Abeysingha¹ and S.P. Dissanayake²

¹*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture,
Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*Queensland Alliance for Agriculture and Food Innovations, University of
Queensland, Brisbane, Australia.*

Weather is a vital production factor for crop production. Weather forecasting helps farmers for planning their farming activities which is crucial under the backdrop of climate change. This study investigated the farmers' perception and the reliability of weather forecasts offered by the Natural Resource Management Center in collaboration with the Meteorological Department for the *Palugaswewa* Tank Cascade System in *Anuradhapura*. A pre-tested questionnaire was used to collect information on the perception of the weather forecasts on crop production. Descriptive statistics were used to characterize the users and non-users while the Friedman test was employed to evaluate the differences between two groups of users of weather forecast on farming. The reliability of weather forecasts was evaluated by comparing forecasted and observed rainfall using the Wilcoxon signed-rank test, Mean Bias Error (MBE), and Mean Squared Error (MSE). Among the 104 farmers surveyed, 40% were users of weather forecasts. Results revealed significant differences among the farmers' perceptions of the weather forecast. The highest rank posed for the decision-making of the farming activities among the influencing farmers according to their perception. The adoption of improved weather forecasts contributed to economic benefits, notably by enhancing farmers' savings and asset accumulation through better management of weather-related risks. Increased cropping intensity was noted among 53% of forecast users, reflecting positive impacts on land productivity. Thematic analysis revealed key barriers to weather forecast utilization, including limited awareness, restricted smartphone access, poor internet connectivity, and insufficient access to essential technologies. The study highlighted the variability in forecast accuracy and limitations in their reliability for precise agricultural applications. The study concludes the need for targeted training, alternative dissemination channels, and simplified content to enhance weather forecast adoption. Additionally, systematic data storage is critical for improving forecast reliability and supporting sustainable agricultural productivity in *Palugaswewa* tank cascade system.

Keywords: Barriers of adoption, Cropping intensity, Weather