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Full Length Research Paper

Indigenous knowledge in seasonal rainfall prediction in Tanzania: A case of the South-western Highland of Tanzania

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This paper describes how farmers in the South-western Highland of Tanzania predict rainfall using local environmental indicators and astronomical factors. The perceptions of the local communities on conventional weather and climate forecasts were also assessed. The study was conducted in Rungwe and Kilolo districts in Mbeya and Iringa regions respectively. Participatory rural appraisal methods, key informant interviews and focus group discussions were used in data collection and the collected data was analyzed using Statistical package for social science. It has been found that plant phenology is widely used by local communities in both districts in seasonal rainfall forecasting. Early and significant flowering of Mihemi (*Erythrina abyssinica*) and Mikwe (*Brachystegia speciformis*) trees from July to November has been identified to be one of the signals of good rainfall season. The behaviour of Dudumizi bird has been singled out as one of the best indicator for rainfall. Both Indigenous Knowledge specialists and TMA experts have predicted 2009/2010 rainfall season to feature normal to above normal rainfall. Systematic documentation and subsequent integration of indigenous knowledge into conventional weather forecasting system is recommended as one of the strategy that could help to improve the accuracy of seasonal rainfall forecasts under a changing climate.

Key words: Climate variability, seasonal forecasting, El Nino, Dudumizi, indigenous knowledge.

INTRODUCTION

Observed increase in climate variability in most East African countries and particularly in Tanzania has increased the uncertainty in seasonal rainfall prediction and poses a greater challenge to scientists in their efforts to improve forecast accuracy and reliability. Pertinent action are therefore needed to address these challenges to enable the agricultural sector to significantly contribute in the attainment of Tanzania development Vision (VISION, 2025) and achievement of newly launched agricultural policy under the theme "Kilimo kwanza". The newly launched "Kilimo kwanza" initiative put agricultural sector as the number one priority in all development activities in Tanzania, with the purpose of enhancing agricultural productivity and improved quality in agricultural produce through the use of good and modern agronomic practices. However, since agriculture activities in Tanzania are mainly rain fed, productivity of crops to large extent depend on the appropriate and effective decision on when , where and what to plant, which in turn will depend much on the accuracy and reliability of seasonal rainfall forecasting. Officially, Tanzania Meteorological Agency (TMA) is the Agency responsible for monitoring and predicting weather and climate in Tanzania, including seasonal rainfall forecasting. Conventional weather and climate prediction is normally done using statistical and dynamical methods (Johnston et al., 2004; Gissila et al., 2004). In spite of the slight improvement in forecasting accuracy, the present forecasting accuracy, which is 75%, is still not sufficient and the challenges are still numerous due to the strong spatial and temporal variability nature of rainfall

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Abbreviations: IK, Indigenous knowledge; **TMA,** Tanzania meteorological agency; **SWH,** South Western highland.