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Potential for the adoption and use of climate-informed agro-advisories by smallholder farmers in a dryland district of Tanzania

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Abstract

Climate variability has a substantial impact on the productivity, sustainability, and resilience of dryland farming systems. Studies have shown that smallholder farmers can enhance the sustainability and resilience of their farming systems by properly utilizing climate information services (CIS). However, smallholder farmers in the Kongwa district in central Tanzania and similarly in most dryland regions of Tanzania, are still far behind in terms of co-creation, adoption, and usage of CIS to reduce climate-related risks and increase crop yields. This study assessed the major challenges faced by smallholder farmers in the Kongwa district in adopting and utilizing CIS. To this end, a forecast-based digital advisory tool called iSAT was piloted prior to and during the growing season, to demonstrate how to meaningfully access CIS, improve on-farm decision-making, increase resource use efficiency, and achieve better climate risk management. To gain a deeper understanding of the issues that smallholder farmers are confronted with, focus group discussions and household surveys were undertaken. Climate records were analysed to establish thresholds and triggers for various on-farm decisions, with the results used to refine the design and operationalization of iSAT. We found that accessibility, reliability, and timeliness were the primary issues limiting farmers' effective uptake and usage of CIS. Other issues were illiteracy and a lack of location-specific content to assist farmers in properly managing climate risks in agricultural production. More than half of the challenges were attributed to the inefficiency of CIS providers. An evaluation of the effectiveness and efficiency of iSAT in addressing these limitations found that farmers in intervention villages managed climate risks better than farmers in control villages. The growing awareness and interest among farmers in adopting and utilizing CIS provide an opportunity for the public and private sectors and policymakers to re-evaluate and innovate CIS delivery to empower farmers to better manage climate risk. Based on our findings and those from other studies in similar production environments in India, Kenya, and Senegal we conclude that iSAT, the tool developed and tested in the study area, presents a viable model for delivering climate-informed agro-advisories to smallholder farmers.

Keywords: Agro-advisories, climate change and variability, climate information services, seasonal climate forecasts, smallholder farmers