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“Filling gaps and removing traps  
for sustainable resource management”

## Digital Extension Service: Delivering Agro-advisory by an Automated Hotline and Asynchronous Communication via Voice Messages

JONATHAN STEINKE<sup>1</sup>, BERTA ORTIZ CRESPO<sup>2</sup>, CARLOS QUIROS<sup>1</sup>, JACOB MUSYOKA<sup>3</sup>, JACOB MUTEKI<sup>3</sup>, JOY PHILOMENA WANZA<sup>2</sup>, HAPPY DAUDI<sup>4</sup>, GASPAR MAJUTO MGIMILOKO<sup>4</sup>, OMARI MPONDA<sup>4</sup>, JACOB VAN ETTEN<sup>1</sup>

<sup>1</sup>*Bioversity International, Information Services and Seed Supplies, Costa Rica*

<sup>2</sup>*Bioversity International, Kenya*

<sup>3</sup>*Lutheran World Relief, Kenya*

<sup>4</sup>*Tanzania Agricultural Research Institute, Tanzania*

### Abstract

Agricultural advisory services in developing countries need to serve the diverse knowledge and information needs of the farming population. At the same time, policy-makers and donors increasingly expect extension services to produce evidence on their efficiency. The wide availability of mobile telephony services has great potential to support agricultural extension: Digital information services can provide timely agricultural advice to large numbers of geographically dispersed farmers, while generating information on the delivery of advisory messages. Together with extension agents and farmers in Kenya and Tanzania, we have designed a digital agro-advisory service, called “Ushauri”. This service integrates two components: In an automated call-in hotline, farmers navigate an interactive voice response (IVR) menu to access a set of pre-recorded audio messages. Additionally, farmers may submit questions to a speech mailbox. These farmers recordings are sent to an online dashboard for extension agents. Here, registered agents listen to the questions and reply by sending ad-hoc voice messages via automated calls. Moreover, each farmer question is given thematic keywords online. We tested and evaluated “Ushauri” during a 6-month pilot with 260 farmers in Makueni County, Kenya, and a 1-month pilot with 97 farmers in Mtwara region, Tanzania. 37% of registered farmers used the service at least once, listening to 146 advisory messages and leaving 176 questions, in total. We draw three main insights from the pilot implementations: First, providing agro-advisory through automated hotlines using IVR is feasible. But the menu must be simple, to limit the rate of farmers hanging up during IVR navigation. Second, asynchronous communication between farmers and advisors through voice messages can allow efficiency gains for extension services. Because multiple farmers asked the same questions, extension agents recorded certain answers only once, and then sent that message each time a farmer asked the same question. Third, the frequency data on farmers’ access to the pre-recorded audios, as well as the keywords assigned to questions, exposed farmers’ information needs. This knowledge can be used to prioritise further information interventions by the extension service. Our findings are relevant for the ongoing development of digital advisory services for smallholder farming in developing countries.

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