The Stepwise Smartphone Application
Co-creation of innovative agricultural extension support tools

Introduction

IITA Uganda and partners under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) (https://ccafs.cgiar.org/) is promoting increased smallholder coffee farmer adoption of Climate Smart Agriculture (CSA) practices in Uganda.

Initial IITA research on coffee in Uganda began in 2006 and has spread across 30-districts, with 58 field trials, and 178 demonstration plots established and more than 4,000 participating farmers. IITA supports the Uganda Government relevant agricultural and coffee research policies, working closely with the Uganda Coffee Development Authority (UCDA) and the National Coffee Research Institute (NaCORI). Working with private sector impact partners such as Olam, Kawacom, Great Lakes Coffee, and Hanns R. Neumann Stiftung, IITA research activities include: land-use mapping; farmer segmentation surveys, and the development of climate smart investment pathways to increase smallholder coffee farmer adoption of good agricultural and climate smart practices. IITA has published almost 30-scientific articles on coffee.

Climate Smart Investment Pathways for smallholder farmers

Working with private sector impact partners IITA is conducting research into ways to increase smallholder adoption of good agricultural and climate smart practices. An innovate approach – Stepwise - has been developed and is being tested in a number of Arabica and Robusta demonstration plots in Central and Eastern Uganda. The Stepwise approach promotes site-specific incremental application of recommended practices for smallholder farmers: incrementally increasing investment and yields.

Application Development

To support the roll-out of the Stepwise approach a Smartphone application was developed as a tool for use by impact partner extension workers. IITA partnered with Mango Tree, an educational, communication and design company based in Uganda (https://mangotreeuganda.org/) combining research and technical knowledge with creative expertise to develop an appealing and innovative application. IITA impact partners, Hanns R. Neumann Stiftung and Olam contributed insight on information delivery and field-based data collection needs to maximize the usefulness of the application to the private sector.

Architecture and Scalability

The Smartphone application is designed for Android phones. The application offers a push/ pull data system that is accessible both on and off-line. Pre-loaded locally specific content gives the user access to best practice information. New farmers can be easily registered. The architecture allows for fast data transfers and maximizes real-time data synchronization between web and mobile devices. The simplicity of the architecture allows for cost effective adaptation and scalability of the application.

Content

The Stepwise Smartphone application offers consistent and easily accessible guidance on the recommended good agricultural and climate smart practices most relevant for a specific site. The content is a mix of written instruction (translated into the relevant local languages), combined with easy to understand visual illustrations. All pre-loaded content is aligned to the Government of Uganda formal coffee extension training content.

The present prototype of the application is loaded with site-specific Stepwise content for Robusta coffee in Rakai and Luweero districts in Central Uganda, and Arabica coffee in Sironko district in Eastern Uganda. The prototype is accessible on the Google Play Store: https://play.google.com/store/apps/details?id=com.mangotree.stepwise&hl=en

Pre-testing

The application was pre-tested with 38 extension workers and 30 farmers in Rakai and Sironko districts respectively. Variables pre-tested were: functionality, user experience and beneficiary experience. Pre-test participants rated their experience during the pre-test above 50%.

Further improvements to the Stepwise Smartphone application are being informed by ongoing testing with impact partners to increase the functionality of the application and establish a fully functioning back-end database capacity.

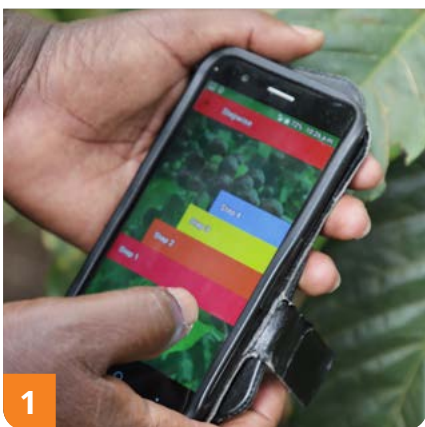> " *I liked the question and answer bit because a question is asked and an answer is given there and then.* "
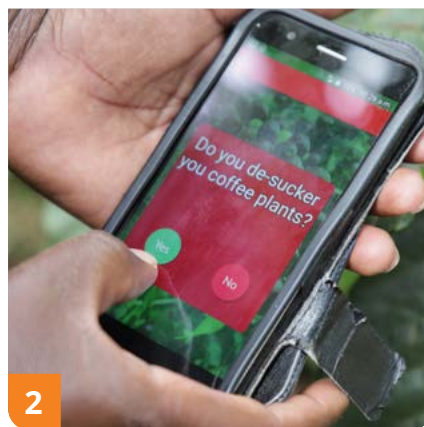
EXTENSION WORKER
from the Rakai 2017
Stepwise Application pre-test
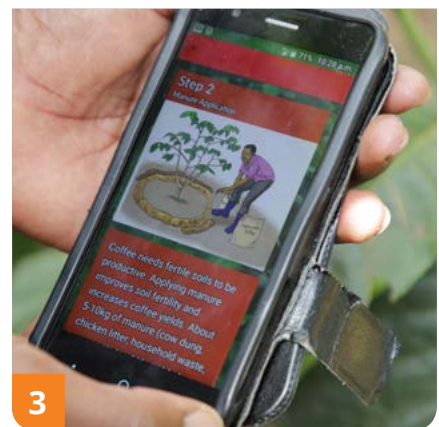
How the Stepwise Mobile App works

Drop down menus allow users to choose different recommended practices for that site.

"Yes" or "No" options offer a process of enquiry of which practices are being applied.

Pre-loaded written and visual descriptions of practices guidance is given.

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