

Food Security Monitoring Efforts in Sub-Saharan Africa

The World Health Organization has classified vitamin A deficiency as a public health problem affecting almost half the children aged 6 to 59 months in Sub-Saharan Africa. According to UNICEF, Vitamin A deficiency can cause childhood blindness and increases the risk of death from common childhood illnesses such as diarrhea.



However, there is one staple food which could help alleviate malnutrition and Vitamin A deficiency in sub-Saharan Africa – the Orange-Fleshed Sweet Potato (OFSP). While this improved potato variety is a good source of Vitamin A, it is not native to Africa.

Over the past few years, the [International Potato Center](#) (CIP) – a research-for-development organization, has been working

with local African farmers to provide them with improved sweet potato varieties and establish an army of vine multipliers through its [Sweetpotato for Profit and Health Initiative \(SPHI\)](#). This endeavor requires collection of various data on sweet potato distribution, root and vine yields, market prices, and location of vine multipliers. Successful uptake of this new Vitamin A rich sweet potato by local farmers depends on data collected by monitoring officers to track distribution, growth and yields.

Most targeted farmers, however, live in rural areas with little access to electricity, modern transportation infrastructure, or internet connectivity. CIP project managers in sub-Saharan Africa had to figure out how to collect important data in such resource limited places. Their solution came in the form of an open source software called Open Data Kit (ODK) designed specifically for this type of environment.

Norman Kwikiriza, a staff member who spends his time traveling across Sub-Saharan Africa to train new farmers who want to adopt OFSP, uses ODK to collect monitoring and survey data using phones and tablets. Data collected includes sweet potato varieties distributed, farmer demographics, and geographic location of vine multipliers complete with farm pictures. CIP uses this data to compare yields among sweet potato varieties, and measure uptake of OFSP in rural households. This data enables project monitoring officers to take swift action whenever things are not going the right way.

“ODK has been an effective tool for this project. It’s cheap and monitoring officers can easily use it. It’s easy to export the results in excel, do my analysis and generate graphs,” said Kwikiriza.

ODK allows users to design data collection forms and deploy them on an android phone or a tablet. One of the benefits of the software is that you do not have to have permanent internet connection to use it. Data collectors can go out in the field, collect data on their phones or tablets, and upload the data later when they have Internet access. ODK has been extensively used in different countries from Afghanistan to Argentina, and is an example of how open source software can respond to needs of automating data collection, and making timely and quality data available for life saving interventions such as these.

“ODK proved to be the easiest tool to work with for most non-technical users in the organization with regard to form development, survey supervision and relevant data management activities after collecting the data.” ~ said Luka Wanjohi, CIP Senior Knowledge Management Associate

Lessons learned

Since May 2014, CIP has used ODK to map out more than 500 vine multipliers, and collect monitoring and survey data on 3,000+ households across nine countries in Africa. This data has helped CIP management to track uptake of improved sweet potato varieties and promote a healthier diet in regions where CIP operates.

ODK is a reliable alternative to automated data collection, particularly in resource limited regions. Since its inception in 2008, ODK has built a vibrant community of users and developers from Trinidad to Tanzania. This community is fairly organized and regularly shares expertise and ideas through online fora. ODK has helped organizations such as CIP collect standardized data across regions, and speed up processing and dissemination of relevant feedback to various stakeholders. Premium or additional ODK features are offered by several companies for a fee. In this regard, CIP wrote custom scripts for exporting data to statistical packages through the help of paid hosting services at ona.io. This helped to address some of the issues they had with ODK's export function.

“ODK has been useful to collect data during regular monitoring or during survey but it has a challenge when it comes to exporting data in SPSS format. Data are exported in different datasets which [takes additional] time to compile. For example, if you have a question that asks a farmer how many children he has, and proceed to ask about respective ages, the two will come up as separate datasets after you export it. [More] time will be needed to identify unique identifier of the two datasets [and] compile them into one,” said Valentine Uwase, a CIP Evaluation Manager based in Kigali, Rwanda.

A couple other challenges mentioned, such as forgetting to include a question or skip patterns, relate more to survey design than any faulty set up of the application. ODK does not serve as a replacement for a survey protocol. The survey protocol details how data should be collected. It informs the design, data validations, skip patterns to include in the XLS form.

BENEFITS

- In-built data validation through XLS forms validation rules. This allows users to minimize errors that can occur during data collection.
- Real-time or near real-time data collection. When data is collected in the field, you can access it from anywhere from the minute it is uploaded.
- Can work without internet connection. You don't have to have internet connection to collect or store data.
- Efficiency and data quality. There is no need to use paper forms. ODK automates data entry.
- Very easy to collect geographic coordinates using ODK, which helps in mapping of collected data.
- Overall better data management and faster feedback from the field for informed decision making.
- ODK helps the project to get data on indicators needed for donor reporting requirements.
- Open source and cheaper than the alternatives.

DRAWBACKS

- Exporting relational data to various statistical packages such as R, SAS, STATA and SPSS did not go as smoothly as expected.
- Sometimes the survey form freezes on the tablet or phone when the form is long and the enumerator is forced to wait or restart the interview.
- Data labels are lost when exporting in excel or csv format
- Using the vanilla installation of ODK aggregate was a challenge due to limited server management resources.

Authored by Maurice Sayinzoga, Senior Associate, Digital Impact Alliance

Maurice Sayinzoga brings 9 years of experience as a development professional. His work spans the fields of education, public health, youth livelihoods development, and ICT4D. Maurice has been working with the Digital Impact Alliance since June 2017.

Contact Maurice at: msayinzoga@digitalimpactalliance.org