SUCCESS STORY

Digital and Mobile Phone-Based Fish Information Systems Connecting Users Across Ghana and Uganda

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November 2017

AquaFish research improves market efficiency

AquaFish researchers in Uganda share Agro Market Day mobile application at a local outreach event (Photo courtesy of Isaac Omiat).

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For small-scale aquaculture in Africa, some of the challenges to sectoral growth are due to a limited flow of information along the aquaculture value chain. Addressing these challenges is critical because improving aquaculture productivity and expanding market access for rural farmers can greatly increase income generation and food security in developing nations.

For many farmers, mobile phones serve as the most efficient means of communication, and can contribute to savings in time and money. To help further advance aquaculture, AquaFish Innovation Lab partners in Uganda and Ghana are building on earlier mobile platforms in Kenya, and developing digital and mobile-based support systems to promote information transfer on aquaculture production, marketing, and sales.

In Uganda, AquaFish researchers from Auburn University and Oregon State University (OSU) in the US and Uganda's National Fisheries Resources Research Institute (NaFFIRI) and Makerere University partnered with Likamis Software Limited to develop aquaculture training modules through the Agro Market Day's mobile application (app) (http://www. agromarketday.com/). Within the Agro Market Day app, an automatch algorithm populates market prices and connects buyers with sellers.

Based on a needs assessment survey, eight technical modules were built on pond design, construction, and management; fish stocking, feeding, and harvesting; and overall fish health. The modules were built for both smartphones and basic, text-based mobile phones and the content has been translated into five languages: English, Luganda, Lunyankore, Ateso, and Acholi.

AquaFish is broadly disseminating the application to farmer groups, buyers, input companies, consultants, organizations, and training institutions. Testing is underway via extension agents, students, and end-users in central, eastern, and northern regions of Uganda, as well as with the women's fish farmer network near Kampala. Based on user feedback, project partners will revise the app and plan to launch to a broad audience at the Uganda Fish Farmer Symposium in January 2018.

In Ghana, AquaFish researchers from Purdue University and OSU in the US and Ghana's Kwame Nkrumah University of Science and Technology

(KNUST) developed a service called the Fish Market Information System (FMIS). FMIS is a web-based tool that provides tilapia market information online as well as via voice and text messaging. AquaFish researchers collaborated with officers from the Ghana Fisheries Commission and a local programming company, Farmerline, to create and populate a central database hosted by researchers at KNUST. Once new market information is uploaded, the system distributes this data in near real-time to users. Already, Farmerline has reported over 320 registered users.

At the end of the project in 2018, Dr. Steve Amisah, AquaFish researcher from KNUST, said "We are hopeful to have 5,000 registered users, including fish marketers and processors from across the southern [region] of Ghana." A new version of FMIS was recently piloted at workshops with 107 local fishers in Elmina and Accra in Ghana. "The Chief Fisherman expressed satisfaction of the relevance of the training," said Dr. Amisah.

Given the parallel development of these technologies in Uganda and Ghana, and the previous research in Kenya, AquaFish partners were able to share best practices, successes, and challenges across projects. A challenge that both projects faced and overcame was obtaining short-code, code that is often expensive and requires technical expertise, but enables cell-based systems to be more broadly adopted. In both cases, industry partnerships have strengthened the end product by helping overcome technical challenges and by transferring and scaling the mobile technologies once developed.

As access to and use of mobile phones in Africa continues to grow, so does the importance of mobile phone technologies for increasing capacity and data sharing among all key players along the fish value chain. Timely and verified information provided through AquaFish mobile phone technologies in Uganda, Ghana, and Kenya are empowering fish farmers, buyers, and other stakeholders, and can serve as a building block for future innovative technologies that address food security challenges.