

Connectivity and Food Security

Boosting yields and fighting crop failure with ICT in rural Sri Lanka

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Evidence Narratives at the Center for Information & Society

This paper is part of a project at the Center for Information and Society to broaden and deepen our understanding of the impact of ICTD.

Our intention is to choose examples of ICTD implementations carefully and to write about them in such a way that each one, individually, illustrates important aspects of the featured settings and so that, taken together, the examples describe and reveal larger themes about core aspects of ICTD. It is our hope that by being systematic at every stage in the research process we are able to expedite the accumulation of credible and accessible information about the impact of ICTD on individuals and communities.

The ICTD field is filled with success stories extolling the benefits of access to Information Technology. As these often rhetorically powerful and memorable stories describe what can be achieved under the best of conditions, they may distort our understanding of what is achieved more typically, or may fail to describe aspects of their settings or strategies that were crucial to success.

Each setting in which ICTD projects are implemented is unique, but our experience is that with careful attention to the idiosyncrasies and commonalities across settings, patterns soon emerge which reveal more general themes about the qualities of settings, people, and programs that make a difference.

While tension may exist between an organization's desire to feature certain cases and the critical researcher's commitment to rigor, we believe that a methodology built on intensive questioning and attention to detail can yield stories that uncover and communicate an accumulation of credible evidence about why individual programs and larger strategies succeed and fail.

By crafting exemplary stories, by developing and disseminating useful methodological tools, and by promoting these techniques among NGO managers and grant makers, CIS aims to shape a research framework that can fulfill the needs of NGOs and donors, with stories that accurately represent realities in underserved communities, accumulating evidence that serves the ends of rigorous analysis while publicizing good work.

This paper is an example and an experiment in this methodological landscape. It is supported in large part by a grant from Microsoft Community Affairs. Direction, guidance and leadership has been provided by Andrew Gordon of the Daniel J. Evans School of Public Affairs at the University of Washington. Joe Sullivan, staff researcher at the Center for Information and Society, is the lead editor for this project.

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When the local farmers from Embilipitiya showed up at Bimal Prasad's office, the eggplant samples they were carrying weren't pretty. Covered in pockmarks left by an unknown pest, the vegetables were ruined and the farmers were desperate. "Seventy five percent of output is vanished," Bimal explained. The farmers needed answers if they were going to save their crops and have enough income to make it through the year.

Luckily for the farmers, they came to the right place. Bimal Prasad is not an agriculture expert. Rather he is a community ICT provider. Bimal offers ICT training programs for young people, communications services to the villagers around Embilipitiya, and – in the case of these farmers – a lifeline to the government office providing agricultural support.

After seeing their samples from the ruined crop of eggplant, known as *bringal* in Sinhalese, Bimal took photographs with his digital camera, emailed those photos as attachments to Mr. Rohan at the government agricultural resource center, and waited with the farmers in the telecenter for a reply. Mr. Rohan soon rang by mobile phone, and the advice was dispensed: use a particular pesticide, and if you continue to have problems come back and we will try another option. It worked.

Telecenters as Magnets for Farming Families

South Asian farmers have traditionally used each other, and government advisors, as resources for improved crop yields and market planning. But as farming techniques become more sophisticated, as transportation grows more costly with rising fuel prices, and as big farmers consolidate agricultural land into fewer hands, it becomes harder for small farmers to compete. A drought, blight, or infestation can devastate their income. New crop rotation techniques and other agricultural information can help.

The expansion of telecenters in rural South Asia has provided farmers with an important resource for accomplishing this: information and communication technologies. The *bringal* farmers were able to photograph, report, and discuss their infestation problem with invaluable visual aids – and get timely solutions. What would otherwise require an expensive, lengthy, and uncertain trip to a faraway city



Residents of the farming villages around Embilipitiya have found their local telecenter to be a lifeline – the traffic for communications services is non-stop. The participation of youth in e-skills training programs acts as a magnet, drawing in locals for other important ICT services. Here a staff member helps town hall officials make photocopies.

by bullocks cart, and the navigation of complex government bureaucracy once there, can now be accomplished with a few clicks (the shutter, the mouse, and the receiver) among other important inputs such as basic ICT skills, knowledgeable and trusted infomediaries and other social infrastructure.

This is not an unusual case. On recent research visits to five remote rural telecenters in southern India and Sri Lanka, a similar story consistently emerged: telecenters can act as a magnet to draw in farmers, anchor social spaces conducive to knowledge sharing and

promote critical information exchanges that enhance crop security. According to Bimal Prasad, in his telecenter alone “an average of ten farmers come every month” with similar concerns about their crops.

A variety of factors combine to draw farmers and prime participation. For example, their children come for ICT training and bring home stories for their parents, or specific outreach programs may be hosted by the telecenters to teach (using ICT) new agricultural practices. Community word-of-mouth is also important. Students’ training may be one of the most significant bridges to their farming families. With training programs at the core of the telecenter work (such as Microsoft Unlimited Potential courses) the graduates, or diplomats, of the centers are spread throughout local communities. Telecenter staff members say the experiences of youth in training programs is a significant entry point for their parents – an opportunity to build trust in the centers and in the knowledge the centers can provide.



When local farmers found their eggplant – or bringal – crop being destroyed by an unknown pest, they turned to their local telecenter for help. This digital photo, emailed to the regional agricultural center, and then followed by mobile phone advice, saved the bringal crop and the farmers’ income.

In addition to the role of the individual center programs as a magnet for farming families, the broader telecenter network is providing opportunities for farmers to come together and share what is working to improve crop yields. The network of telecenters began in 1994 with the support of the well established NGO Sarvodaya, and slowly grew. Along the way it was aided by programs such as Microsoft UP, the Telecenter Family, Agriclincs, and the Virtual Village. These programs, and a government partnership with the World Bank, have created a network of hundreds of telecenters and shared programs that bring them together. Bimal Prasad, the center manager nearest to Embilipitiya, reports that when he attends Telecenter Family programs he shares the experiences of the farmers in his region, and brings back with him the experiences of others.

Crop Yield Benefits During Hard Times

Rural access to ICT – and to the community centers that provide it – can have a broad impact on farming, animal husbandry, and fishing alike. But in rural Sri Lanka, the specific examples of crop yields benefiting from ICT access appear to exceed examples from the fishing and livestock sectors. This may be a question of proximity and mobility: it is easier to bring a handful of green beans into a telecenter than a pregnant water buffalo or a kettle of diseased fish.

In the area of crop yields, the needs served by telecenters are many, and increasing.

A staple crop in the farms around Embilipitiya is the *wetakolu*, a type of green bean. Local farmers had noticed with alarm that their crops had been drying up – shriveling so much that they were useless. Like the *bringal* farmers, they brought a sample of the shriveled beans and used the same tools: digital photography, email, and a cell phone. The result for the *wetakolu* was more complicated. The problem was not a pest but overexposure to sun, something that at least one local villager speculated was due to climate change. The recommendation was to cover the garden area with plastic sheeting, and introduce fertilizer. The result again was a success, and the farmers returned to the telecenter to thank the staff for helping to save their crop.



Climate change is affecting local harvests, including these beans – or wetakolu – which shriveled from overexposure to the sun and decreased nutrients in the parched earth. After snapping and emailing this digital photo, the farmers got expert advice for a fertilizer and shade remedy.

While the loss of some crops like *bringal* and *wetakolu* have a significant impact on a farmer's livelihood, other crops – such as rice, which Sri Lankans call *paddy* – are the foundation of the local food system. When local farmers around Embilipitya began noticing that their paddy crops were becoming brittle and turning brown, their concerns were especially acute. Through their experience with the telecenter they knew they had a resource to turn to, and again brought in samples. The agricultural advisor diagnosed a disease called *keedawa*, recommended a fungicide and fertilizer, and again the problem was solved.

Boosting Income Generation

At the bustling local vegetable markets in Sri Lanka's villages and cities, shoppers

select from an array of colorful and fresh produce to feed their families. What the shoppers don't see are the vegetables that never make it to the produce stands: the bringal pocked with holes because of pestilence, the wetakolu harmed by the sun's rays in drought conditions, and the paddy stalks shriveled and brown because of disease. For Sri Lanka's small farmers, the difference between a market stall filled with fresh vegetables and one that is empty is more than just a source of frustration experienced by a shopper planning dinner. For farmers, the difference affects their livelihoods all year long.

By fighting back against crop failure with the help of information and communication technologies, local Sri Lankan farmers are able to keep up in an increasingly difficult agricultural climate. They are also able to better understand what their children learn at trainings in these community telecenters, and the value of the money they spend on tuition. According to Ganga Vidya, director of the Village Knowledge Centers program across the water in Tamil Nadu, India, the role of the telecenters as a resource for farmers is foremost about rural self-sufficiency. Closing the digital divide, she says, is about "making it okay for people to stay in villages as farmers."

Isura Silva, the head of Fusion, the NGO which connects and supports the Sri Lankan telecenters for Sarvodaya, describes the goal of the rural ICT networks in a way similar to Ms. Vidya. "Telecenters are a place to bridge distance," says Mr. Silva, so that farmers can be farmers, but still benefit from what the city has to offer.



In rural Sri Lanka, agriculture is the dominant local income. Farming communities – like this one near Embilipitya – are also remotely located, and can suffer from lack of access to information.

AUTHOR

Mark West is an ethnographer whose international research and work in the development field is based in South Asia and in Central and Eastern Europe. Mark's fieldwork has centered on the use of critical ethnography to bring a more participatory connection between local communities and international development projects.

In South Asia, Mark's research and work focus on the resistance networks of rural Dalits, or "untouchables," with a particular interest in the grassroots campaigns of barefoot lawyers. In Central and Eastern Europe he has worked to improve the transparency and communications of newly developing court systems. Since 2007, Mark has begun conducting fieldwork with the CIS on the economic and social impact of ICT programs in marginalized communities around the world.

Mark has served as a rule of law consultant with the United States Agency for International Development in Eastern Europe, and as a Human Rights Field Mentor with Stanford LawSchool. He holds a J.D. from the University of Washington, and is a Ph.D. Candidate in the School of Communication and Department of Anthropology at Northwestern University.