



e-Agriculture Good Practice

Digital Green's social behavior change communication model for extension



Videos scaling the reach of extension workers and increasing adoption rates of best practices

Key facts

- **Location:** South-Asia and Sub-Saharan Africa
- **ICT used:** Video, data management framework
- **Area of work:** Extension services – nutrition and agriculture
- **Target group:** Rural farming communities
- **Stakeholders:** Smallholder farmers, extension workers and over 50 partners in 20 projects
- **Timeframe:** Since 2008

Incubated as a Microsoft research project in Bangalore, India, in 2006, the Digital Green participatory video project was part of an effort to test different ways of using technology for social development. This project focused specifically on testing the use of participatory video as a means of agricultural extension. The approach was proven to be substantially more effective as a means of extension than existing conventional agricultural extension programmes.

Digital Green has partnered with over 50 partners in over 20 projects since 2008. Digital Green has implemented projects in nine states in India, and in 15 other countries including, Afghanistan, Nigeria, Nepal, Papua New Guinea, Ethiopia, Ghana, Niger, Burkina Faso, Ivory Coast, Guinea, Tanzania, Mozambique, Senegal, Malawi and Guinea.

Digital Green reached over 1.5 million farmers with their videos since 2008



Context and problem addressed by information and communication technologies (ICT)

Although smallholder farmers produce much of the world's food, they are too often poor and malnourished. Digital Green has been working since 2008 to improve smallholder farmers' productivity by partnering with governments, private agencies and, most importantly, rural communities themselves to co-create digital solutions that are of the community and for the community.

Initially incubated as a research project at Microsoft Research, Digital Green's model was developed by a group of engineers and economists. Their research revealed that the prevalent agricultural extension systems in most developing countries could be costly, slow, and limited in effectiveness.

Classical 'training & visit' programs usually involve an extension worker traveling from village to village, door to door, and speaking with a select number of individuals in a village, usually males who own larger farms.

Farmers may be slow to adopt external extension trainers' techniques due to several factors: external agents often do not possess location specific knowledge, their visits can be infrequent and erratic, and their information rarely reaches farmers with the lowest yields, who often are women. Alternatives to the 'training & visit' mode, such as farmer field schools are believed to have a better impact, but at a dramatically higher cost. Cost-effective solutions are rare.

The development of the ICT used: videos and data management platform

Digital Green trains communities and partner staff to create short videos capturing scientific and locally relevant best practices to be disseminated among the local community. These videos are filmed by rural community members and also featuring them, edited and shown in community screenings in neighboring villages.

Digital Green builds the capacity of the partner organization's field professionals and community-level intermediaries to produce and share localized videos to improve the efficiency of their existing operations and broaden the participation of the communities that they work with. Digital Green has developed specific capacity building modules (<http://www.digitalgreen.org/training/>) on video production, dissemination (screening) and data management.

A robust data management framework, called **CoCo** (<http://www.digitalgreen.org/coco/>) was developed to capture near-real time data on the screenings and adoptions of the best practices by the viewers of the videos. The framework also includes strong monitoring and evaluation tools to provide evidence based learning and feedback. Data collection and analysis is critical to the work of Digital Green, and CoCo is the data workhorse. Short for Connect Online Connect Offline, CoCo and the analytics dashboards allow users to collect and visualize crucial insights anytime, anywhere, on any device – regardless of network connectivity.



A village resources person explains the non-negotiable aspects of a good practice at a video screening

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From what videos are produced to what practices farmers apply on their farms, the data are tracked in the framework. Built as a robust standalone application in the Internet browser, CoCo requires no software installation or maintenance. With affordable smartphones and tablets becoming increasingly common, CoCo was developed to be fully functional on all modern browsers compliant with the HTML5 standard and can be opened on any device.

The Analytics Dashboard generates near real-time information for learning, monitoring and evaluation, even in remote and rural areas with limited electricity and Internet connectivity. The user-friendly tool allows drilling down from country to village level, zooming in on the exact information needed to track performance and drive program improvement. Rigorous quality assurance is part of Digital Green's data philosophy. To ensure that the data is sound and trustable enough to inform programmatic decisions Digital Green regularly validates the quality of the data collected. The staff regularly goes out and validates data: they go to see video screenings as they happen, visit the field to check on adoptions, and have third-party evaluators come in to check data on CoCo.

Data analysis and evaluation is an integral part of the process, therefore Digital Green shares the quantitative and qualitative data gathered with researchers, practitioners, policy makers, and anyone else involved, creating a community of collaborators that improves systems on an ongoing basis.

Digital Green uses evidence from the grassroots-level to inform and galvanize this constellation of stakeholders on what works -- and what doesn't -- to advance agricultural development globally.

Digital Green's bottom-up approach leverages existing rural social networks such as women's self-help groups and farmer groups to create and share localized content on best practices related to farming, livelihood, health and nutrition through short videos using low-cost and durable technology.

Digital Green plugs its model into existing, people-based extension systems, aiming to amplify their effectiveness. For instance in India, Digital Green works closely with the National Rural Livelihood Mission (NRLM) as a National Support Organization. Digital Green trains the extension agents identified by the State Rural livelihood Missions in using the video-based approach, which magnifies their reach and impact.

CoCo and the Analytics Dashboard are open for anyone to use.

Check them out here: <http://sandbox.dgtest.org/coco/#login>

Login: guestuser - Password: digitalgreen

Analytics dashboard: <https://solutions.digitalgreen.org/coco/analytics/>

A community video production team of four to six individuals in each district creates videos, averaging eight to ten minutes in length, which are screened for small community groups twice a week using battery- operated Pico projectors (small portable projectors). The practices promoted through the videos are locally relevant and evidence-based, produced in the regional language. The short videos cast local community members, thus ensuring the viewers' instant connection with the messaging. Subject matter experts review the video content before it is finalized for screening. A trained village resource person mediates a discussion around the video screenings by pausing, rewinding, asking questions, and responding to feedback. Regular verification visits are scheduled for measuring the effects of the screenings on adoption of actual practices.

The entire approach is designed to be responsive to community feedback, channeling data and feedback received from community members into the video production and dissemination processes and overall program performance. Trained extension agents record farmers' attendance at video screenings, interests, queries, comments and any changes in their behaviors as a result of adopting a new practice/technology.

The farmers share their thoughts on anything they choose, from the videos they would like to watch to the viewing experience to the challenges they face in their daily lives. This feedback is used to inform further iterations of the videos, and also of essential background processes such as storyboarding, the messaging, or even the way a screening is organized.

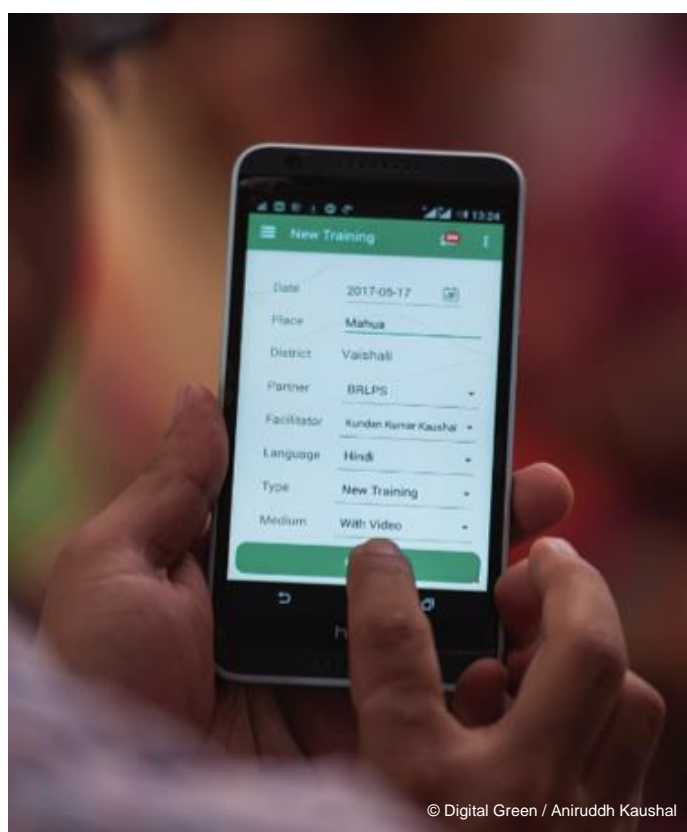
For instance, in a project site in Amethi district of the Indian state of Uttar Pradesh, we recognized farmers' reluctance to adopt a new way of treating seeds was because they didn't fully understand what the associated video described. On further examination, it was found that it was a challenge for the farmers to remember the measurement for trichoderma, an important seed-treating agent, which was communicated in grams per unit volume of wheat. When the measurement unit was tweaked from grams to approximate teaspoon measurement, the farmers were able to understand and retain the concept.

Innovation and success factors

Digital Green offers a community-driven, technology-enabled, knowledge-sharing platform for rural communities to share and promote evidence-based and localized best practices. The communities are both creators and consumers of knowledge products which also capitalizes on the thrill of appearing "on video" to increase the reach within the communities' social networks.

Digital Green has demonstrated that a participatory process of engagement combined with simple technology solutions can enable small-scale farming communities to produce and share information on best practices for improved productivity and sustainable livelihoods. Initial pilot studies not only indicated a higher uptake of practices through the video-based approach, but also revealed that the Digital Green model was more cost-effective than classical systems of agricultural extension.

[Gandhi et al. \(2009\)](#) state that the Digital Green approach was at least ten times more efficient and seven times more likely to encourage farmers to adopt new practices compared to conventional agricultural extension systems.



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A trainer records the skills of the VPR's in a mobile application.

Sustainability

Digital Green's role of a National Support Organization with the Government of India's National Rural Livelihood Mission (NRLM) since 2012 has enabled several successful partnerships with the state bodies in Bihar, Rajasthan, Jharkhand, Odisha, Telangana, Andhra Pradesh, Maharashtra, and Chhattisgarh. They have plugged their video based approach to strengthen their extension systems that are delivered primarily through women's self help groups. Digital Green works with all levels of the government in over 14,000 villages across India (Dec 2017), and trained over 12,000 frontline workers (Dec 2017) to use our approach, promoting improved agriculture and nutrition practices. Women constitute over 90 per cent of the viewers of our videos and they are themselves the adopters of the best practices shared through the videos and also act as the carriers of the message within their families.

India's National Rural Livelihood Mission has committed itself to operationalize Digital Green's approach. This transformation has shifted the way NRLM produces and shares knowledge between the research agencies, extension agents, and farmers that it engages as well as how it collects and analyzes evidence for its policies and programs at national, state and local levels. We have developed similar successful partnerships with key stakeholder in Ethiopia and other countries as well where existing national extension systems absorb the costs and improve their reach and efficacy.

Digital Green's video-enabled approach is dependent on people – in particular, frontline workers who screen the videos in their communities.

Digital Green has an average adoption rate of over 60% for the promoted best practices

Replicability and upscaling

Digital Green works towards addressing the information gap for rural communities through appropriate technologies. Combining offline solutions such as handheld camera and projectors to produce and screen videos with mobile app based solutions and online data management platforms that also tackle limited Internet connections and intermittent electricity supply.

Data captured on intuitive paper forms is digitized using an innovative data management system, Connect Online | Connect Offline (COCO) that allows users to seamlessly toggle between offline and online modes on the web browser for uninterrupted usage in regions with intermittent Internet connectivity.

This data powers a suite of online Analytics Dashboard to help monitor and improve programmatic activities on the ground. The public, private and civil organizations they partner with deploy the offline and online solutions to increase the efficiency of their extension services and help improve the lives of rural communities.

The aggregated data helps in trend analysis, in performance assessment and in measuring the outcomes of the intervention.

Digital Green staff providing training to the village resource persons on filling paper forms for data collection



Individual farmer feedback is collected, aggregated and visualized, generating trends and to make programmatic course corrections based on field-level observations - underscoring the value of employing a bottom-up approach to designing community interventions.

Digital Green's suite of mobile solutions currently comprises of responsive web tools, mobile applications and interactive voice response systems (IVRS) and also a video-enabled courseware for training the frontline staff and a mobile assessment app.

Applying the model in other sectors

Given the model's success in agriculture, a feasibility study conducted in 2013-14 showed positive outcomes in applying the Digital Green approach to promote nutrition behavior change and provided some suggestions for greater impact.

In 2015-16, Digital Green led the BIRAC Grand Challenge India-supported "Digital Technology Enabled and Community-Driven Integrated Agriculture and Nutrition Intervention to Promote Maternal and Child Nutrition in Odisha" project, which aimed to strengthen Digital Green's participatory video approach to improve nutrition behaviours in Odisha state (India) by establishing in quantitative terms its effectiveness. The project showed significant improvement in knowledge of key nutrition behaviors among mothers of young children.

The project was conducted in 30 villages of Keonjhar district, Odisha. These villages were randomly assigned to either a control group, exposed to video production and dissemination consistent with Digital Green's existing approach, or an intervention group, which accessed video production and dissemination with a special emphasis on enhancing content identification, content development, and facilitation through a participatory learning and action (PLA) approach. Results suggest a significant improvement in the knowledge of self-help group members on nutrition issues across both intervention and comparison arms. This program demonstrated the effectiveness of participatory videos and the participatory

learning and action (PLA) method to change nutrition behaviors and has the potential to be adapted and replicated in other nutrition programs. Following this Digital Green has deployed its approach to improve the health and nutrition extension systems in many different regions in India and countries of Africa.

Future Vision

With a new five-year strategy, efforts are on now to map the impact of the work in terms of improvement in yield and income. Digital Green is taking the engagement further by adopting the value chain lens and exploring new application of technologies to ensure better market linkages and credit facilities for farmers.

Farmer's story

"Ghanjeevamrit (bio fertilizer) keeps the soil light and helps it retain moisture, which in turn keeps the plants greener and healthier. The vegetables also taste good. I am really glad that I watched the videos on natural farming and have adopted it," shares Somia Devi of Nikaspur village, Samastipur District, Bihar, India.

"Earlier, when I had only heard about this new method, I was quite unsure. I used to wonder if my field would adjust, but now after watching the video and adopting this method I am very confident and also motivate others to adopt it. It was difficult for me to convince myself before I watched the video," adds Somia Devi who owns a plot of 1 Kattha (1 acre is 22 kattha) where she grows a variety of vegetables.

The video Somia Devi refers to, is part of the unique model used by Digital Green a not-for-profit international development organization that uses innovative digital solutions and community engagement in the areas of agriculture, livelihood, health, sanitation and nutrition, to improve lives of rural communities across Asia and Africa.



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Vinay Kumar is the Regional Director for Asia and Global Initiatives at Digital Green.

Vinay Kumar is a founding member of Digital Green and provides leadership to program strategy, organizational development and operations. His interests include sustainable agriculture, livelihoods, global health and nutrition. He has extensive experience of over 30 years in public, private and non-profit sectors. Prior to Digital Green, Vinay was India Operations Director at Program for Appropriate Technology in Health (PATH). He led operations at IntraHealth International Inc. for its Asia and Near East office. Vinay also served as an Advisor to the Department of Biotechnology, Govt. of India and Consulting Editor of Indian Management, a professional journal of All India Management Association. He has an MBA from Delhi University, MA in political science and M. Phil. in international relations from Jawaharlal Nehru University.

Resources

- Website: www.digitalgreen.org
- Gandhi, R., Veeraraghavan, R., Toyama, K. & Ramprasad, V. 2009. Digital Green: participatory video for agricultural extension. Information technologies for international development. MIT Press. Available at, <http://itidjournal.org/itid/article/view/322/145>

E-AGRICULTURE CALL FOR GOOD AND PROMISING PRACTICES

This document was developed in the framework of the 2017 e-Agriculture Call for Good and Promising Practices on the use of ICTs for Agriculture and Rural Development in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and the Technical Centre for Agricultural and Rural Cooperation (CTA).

e-Agriculture is always happy to review your good or promising practices! You can submit a proposal, following the sections in this document to e-agriculture@fao.org

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Good and Promising Practices on the use ICT for agriculture in collaboration with

