Imagine the world to be one village and all of us being extension functionaries. We have the motivation, but not the wherewithal, to get farmers to have a life that is better than normal. Then, came along many a tool that gave us the strength to support our motivation. This is a true story of all the possibilities that could happen if the world were one expansive village and Aarthi was our friendly, cheerful extension functionary reaching out to everyone.

The Precursor

In 2006, since the farming community in India still did not have much access to communication technologies, disseminating agricultural-related information to farmers was challenging. Disseminating information to farmers on improved agricultural practices was the need of the hour.

Rikin Gandhi (the co-founder of Digital Green and currently its executive director), then a researcher at Microsoft, was considering the need for information dissemination to the farming community and studied various modes of information dissemination. Those were audio Green (information through audio), poster Green (information through posters), and digital Green (information through audiovisual). While all these modes included
human mediation, digital Green (the video-based approach) proved to be more efficient in terms of better understanding, retention, and reach to address a wide audience (including the semi-literate).

The research project evolved into Digital Green, an independent organization, in May 2009. From then on, the organization has been working closely with its partners as a resource agency to maximize their extension efforts by using the “Human Mediated Extension” approach. Digital Green itself, as well as the approaches it has been demonstrating and propagating, have evolved over the years.

This case study is an effort to portray the evolution of both the organization as well as its innovative approaches through the experiences of a field-level extension functionary. The narration from the foci of an extension functionary may give the reader an idea of the technologies that Digital Green has been espousing, solely to empower extension functionaries like her, and hence, create an ecosystem for efficient flow of information to the farmers.

Over the last decade, the extension model has undergone multiple iterations and has been adapted to the needs of the community as well as the service provider. Even within these iterations, it has still retained the basic spirit of providing information to the farmers through a visual medium with a protagonist whom the farmers can identify as being one of their fellow community members. This simplified process of creating and distributing hyperlocal content provides the flexibility to adapt to the community’s needs and be adopted by the service provider (both within the governmental and nongovernment organizations) and has driven the success of this extension system across multiple places.

Additional tools have come together to enhance the effectiveness of the extension system. These have been tested as components of various projects that Digital Green has implemented. The utilization of these additional tools enhances the capability of the extension agents to provide services beyond the information needs of the farmers. The narration that follows describes some of these innovative and important tools.

The Early Users

A tree-lined and shaded road in Yemmiganur taluk (a collection of villages and small towns) leads to the village of Kanakaveedu. At the end of this broad and metaled road is the modest dwelling of Aarthi Kumari and her family. About 8 years ago, Aarthi had come into this house as a daughter-in-law and since then had been supporting her agrarian family by toiling in the family’s land, like other women in her neighborhood.

But her sharp acumen of picking up new concepts of farming led to conversing with her neighbors. When the opportunity came, she joined the extension force of the Department of Agriculture as a community resource person (CRP). For the first time, this woman, who had not been able to complete high school due to economic compulsions, had a chance to be employed as well as become a facilitator at the village level.

With support from her husband as well as her in-laws, Aarthi had been striving to get information to the farmers that the Department of Agriculture and Cooperation, Government of Andhra Pradesh (DoAC–GoAP) wished to reach out with. Like clockwork, for six days a week, she connected with
farmers twice each day. Generally in the morning, she conducted Farmer Field Schools, and in the evening, she conducted video disseminations.

Early in her job, officials from the DoAC–GoAP provided her with the skills to conduct Farmer Field Schools. Shortly after the department decided to introduce the video-based Human Mediated Extension System for motivating farmers to adopt practices of Community Natural Farming (CNF), Aarthi and her batch of CRPs had been called to the District Head Quarter for a training on the extension system.

Despite the best of extension interventions, influencing passive listeners has always been a major challenge. In this context, DoAC–GoAP collaborated with Digital Green to document and disseminate best practices in the form of videos to farmers to enhance their learning. As part of this initiative, the Digital Green team conducted training to build the capacity of lead farmers and extension staff in video production and dissemination.

Designated as “Video Dissemination Training” and spread over three days, these trainings were conducted at the Technical Training and Development Centre of the government. This training was “... most interesting and one of the best I had ever attended” in the words of Aarthi. The main purpose of the training was to introduce the nuances of digital extension to Aarthi and her fellow CRPs of the district. The training aimed at improving the extension skills of the CRPs and using the community videos through the Pico projectors, which are small, portable, lightweight projectors.

At almost all the trainings, the trainers from Digital Green encountered a set of heterogenous participants. Participants at the same training could be lead farmers, extension staff members of the government, or of their associated organizations. While most felt that mobilizing farmers was the biggest challenge, some felt that extension itself was a time-consuming activity. Others, who were not exposed to modern modes of Information and Communication Technology (ICT) were apprehensive about the use of gadgets, especially in areas of erratic electricity supply. Still others had doubts about the ability of farmers to accept and learn farming techniques, which required them to undergo a paradigm shift from what they might have learned from the elders of their family or community.

The general feeling among the trainees at the start of most of these dissemination trainings was that each day in the field situation brought a new challenge. In an effort to satisfy the expectations of the trainees, the trainers focused on aspects of group mobilization, addressed the apprehensions about the use of new technology as well as showed the enhanced value of using videos at the grassroots level. Many times, the heterogeneity of the groups turned out to be a boon in disguise. There always would be some very active participants who would raise the spirits of others, especially during the group activities. As discussions and debates were encouraged, apprehensions gave way to enthusiasm with the participants, who tried to relate their field-level experiences to the topics that were discussed.

“I believed I was always right in my thinking and I rarely considered other’s points of view. But after this training program, I realized and learnt that I needed to respect the viewpoints of others and especially the farmers with whom I work,” said Aarthi.
While traversing through a series of logical sessions, including sessions on adult learning principles, the participants reflected on various aspects of their work and tried to relate it to the functions that they were expected to fulfil in their roles as frontline functionaries.

Figure 14-1. Practice session at a dissemination training. (Photo courtesy Digital Green Foundation.)

A session on visualization gave them the opportunity to foresee the conditions of the farmers in their villages in the ensuing five years. The responsibility to expand the adoption of practices among their fellow farmers and thereby improve the overall health and economic status was looked at through a series of practical and achievable milestones. This assisted the outreach functionaries to be strategic over a long term. They would not be overawed by the responsibility of bringing about a huge attitudinal change in their immediate neighborhood.

The training schedule was planned and conducted so that the functionaries immersed themselves in a theoretical framework. They were also provided practical examples from their work so that they could relate to the concepts shared in the lectures. During the same training sessions, they practiced approaches to mobilize the groups by establishing trust and strengthening positive dynamics. They were provided skills on interpersonal communication that they could use while mediating a video at the farmers’ meeting.

As shared during the feedback session at the end of the dissemination training, the functionaries expressed that they felt a multitude of emotions. For some it was a reinvigoration of concepts that they would have already used and additionally learned new techniques of community mobilization. The amalgamation of these would help them have greater clarity of the task at hand. But for many, it was the first time ever that they had a chance to experience a process of using community mobilization tools, coupled with the excitement of using an electronic projection system. With these new feelings, the trained outreach functionaries would leave for their karma-kshetra (Sanskrit for work region or place of work) and also with an assurance that the Digital Green team will be there with them for continued support.

As the trainings would draw to a close, there was a palpable sense of urgency among the trainees to use the new technology. By this time, almost all of them would have realized the importance of having access to audiovisual content and an innovative (as well as practical) Pico projector to use this content. They would acknowledge that this was a creative and a practical solution. The use of audiovisual content in Kurnool, a district in Andhra Pradesh of India, as well as in other far-flung and tribal hinterland
was surely a gamechanger. Aarthi and her other friends echoed the thought that they could now easily engage the farmers by using these audiovisuals during the discussions. Almost every trainee would share that Digital Green’s training methodology was “creative and thought provoking.”

A belief of Digital Green is that language will not remain a barrier for a learner if there are efficient learning systems. This was reinforced over and over again when extension staff would later share that this extension approach was more than just a technological intervention, but a critical path to share knowledge that the farmers could comprehend easily.

Aarthi returned from the training with renewed enthusiasm and many skills. She also came with a new gadget that she had seen for the first time in her life. It was a projector, so small that it could fit into her handbag. When she showed it for the first time to her family, they were amazed. The word quickly spread around the village that Aarthi would now show “cinema” about undertaking better agriculture practices to all those interested. At the next meeting she conducted, a larger than normal crowd waited to see what the gadget was. Taking this as an opportunity to garner interest within the farmers, she announced a schedule of cinema shows, which we would call video disseminations.

At sundown, farmers gathered at the veranda of the local primary school. As Aarthi opened the box in which the Pico projector came, a distinct murmur arose from the gathering when they saw a “mobile-like device,” which was supposed to be used to show videos. When Aarthi set up the projector and started disseminating the video, a palpable amazement occurred within the crowd—more so when they realized that the people featured in the videos were farmers from the same district.

As the video dissemination progressed at Kanakaveedu and hundreds of villages across India (under collaboration with the National Rural Livelihood Mission of the Government of India) as well as in Ethiopia (with the Ministry of Agriculture), the use of these hyperlocal videos through the Pico projectors worked magic for functionaries like Aarthi. Extension functionaries have expressed that these videos and the training to disseminate them have been the most helpful tools for them.

“This has been a friend in need, who can provide information without getting tired throughout the day at any number of meetings, while we explain the finer points” was one thought that has been shared by numerous extension functionaries.
Aarthi and many of her fellow outreach functionaries used to wonder where these short videos featuring local farmers and other extension functionaries came from. Little did they know that they could also get featured in some of those. When the farmers saw people like themselves in the videos, they too were fascinated. Their curiosity grew when they got to know that the characters in the videos were real-life farmers from their own district (or the neighboring one).

Videos made with local farmers in the local dialects were an important tool in the process of facilitating behavior change. Homophily attracted farmers to the video disseminations.

“... when someone like their own self talks about a practice that they have done and have gained some tangible benefits, this makes the farmers sit up and think. That is the time when I motivate them to try out a new practice,” explained Aarthi.

While the farmers may not be completely convinced the first time around, showing similar videos coupled with practical demonstrations to groups of farmers helped to gain their confidence and to convince them to undertake the practice in the field.

One day, Aarthi received a call from the District Program Manager (DPM). Due to her proactive work and her ability to get many of the target farmers in her village to adopt innovative CNF practices for managing soil nutrition, she was recommended to be featured in a few practice demonstration videos. While her joy knew no bounds, she was also a little nervous about the whole process. She was assured by the DPM who told her the video team would contact her soon.

True to the words of the DPM, Aarthi received a call from a woman who introduced herself as Laxmi, a video resource person (VRP) working for the District Program Management Unit (DPMU) of the Kurnool District. Laxmi mentioned that she and two of her other team members had been instructed to get to Kanakaveedu to shoot the assigned videos. On the decided date, Aarthi was pleasantly surprised to find a team of three women at her doorstep. They introduced themselves as the VRPs.

Aarthi talked to the village headman to get the three VRPs accommodated at the spare room in the local primary school. Over the next three days, the VRPs worked with Aarthi, a few farmers, and a couple of volunteers to shoot a video, which was later produced as a method of preparation and use of panchagavya (a growth enhancer in liquid form that can be used at the time of irrigation).
During the course of their stay in the village and the shoot, Aarthi, Laxmi, and her two friends interacted at length. Aarthi was truly fascinated by the way the three women carried about and used the video production equipment. In 2012, this was a sight to behold. Neither Aarthi nor the villagers of Kanakaveedu had ever seen women wielding a camera and walking to the site of a shoot with a tripod as well as a reflector in their hands. As the camaraderie grew, the four women talked about their families as well as the way they delivered on their work targets in spite of all the household chores.

Fascinated by the skills of the VRPs, during their discussion, Aarthi got interested to know how the three women from rural areas of Kurnool, who had never held a camera or even a smartphone (which was a rarity at that time) became competent video film makers. They said that their whole outlook on life changed the day they had separately decided, with their respective spouses, that they would try for a “part-time” job advertised in the local newspaper. After having decided to go for it, they landed an interview where members from the organization called Digital Green gave them cameras and asked them to take photographs of “anything their heart desired.”

What followed their selection was even more fascinating. At a five-day training program, Laxmi and her friends learned the nuances of video production to become skilled VRPs. Starting from the process of identifying content with the DPM, storyboarding, and identifying the parts of a camcorder, they learned the process of capturing audio as well as looking at correct camera angles and light. They learned the all-important skill of narrating the story in a visual format that fit within the duration of 8 to 10 minutes.

With all that enthusiasm, Laxmi and her friends started working on producing the visual content at Kanakaveedu. As per the standard procedures, they arrived at the location of the shoot before the break of dawn. For them, the days of the shoot started at 3 a.m. After completing their chores, they traveled to the shooting spot early in the morning and got ready to follow our superhero—the farmer. The aim was to be candid in narrating the story and for this, the VRPs kept following the superhero for the days when the shoot went on. In between the shots of capturing the agriculture practices, they also motivated the farmer to share his experience about these practices and his message to fellow farmers. Though it sounds simple, it took
a lot of patience, practice, and efforts of Laxmi and her friends. This was not just a job for them. The efforts of these women (and the others in the training) as to how they transformed from housewives to content developers following the training should be recognized.

With the shoot for the video over in 3 to 4 days, the three VRPs returned back to the DPMU office at Kurnool. All the post-production activities took place at the district office and the videos (together with all the others produced over that month) were sent for review by the subject matter experts (SMEs). The DPMs, SMEs, and members of the Digital Green team would meet every 30 to 40 days and review these videos to ensure content quality. While the officials of the DoAC–GoAP ensured that all the non-negotiables of a practice were captured, the Digital Green team would ensure that the quality of visuals, the audio as well as the editing was good. After the videos passed strict quality control, they were approved by the DoAC–GoAP officials and only then were they sent out to functionaries like Aarthi to be disseminated in the villages across the same district or the neighboring one. Across multiple geographies where Digital Green engaged with partners to create such content at the community level during the first decade, over 3,500 community videos were produced in about 25 languages.

Within a month or 45 days of the shoot, Aarthi had access to the video, which was shot at Kanakaveedu. This featured her explaining the nuances of preparing a CNF growth enhancer. When the video was disseminated at the villages, the farmers were pleasantly surprised and also happy that such a practice was being “… taught to many farmers across the state by a lady from their village.”

A Quality Achievement

As work progressed, Aarthi kept reporting back the data to the district level. She reported about all the disseminations she conducted as well as followed up with the farmers on the adoptions and other interventions that the DoAC–GoAP had trained her to do. Each month, she would submit these reports to the data entry operator at the district office of DoAC–GoAP. The dissemination and adoption data would be keyed into an open-source system called Connect-Online-Connect-Offline (COCO) that Digital Green had developed. This was used across the geography where the government departments as well as other partners of Digital Green implemented the “Human Mediated Extension System.”

COCO has a simple data entry process that presents the results in analytics, which allows for management personnel to look at the trends in the program processes. The flexibility within COCO is such that the program managers can get access to trends regarding their complete program areas (country/state/district) as well as regarding the smallest program units such as a village. With the possibility of getting near real-time information, COCO became a tool for the program managers to review their cadres. Initially, there was paper-based reporting but within a few years, to make the process easier for extension functionaries like Aarthi, a mobile-based app was developed. Government departments who provided the extension functionaries with smartphones rolled out the use of the mobile application.
Across all partners (government or otherwise) Quality Assurance (QA) as well as State/Woreda (as in Ethiopia)/District-level reviews were done based on data made available in COCO. At one such review at the district level in Kurnool, Aarthi was surprised to see that the progress made in each village was being displayed within the DPM’s presentation. She was euphoric with the commendations she received at the review and when the DPM showed everyone that the achievements of the project in Kanakaveedu was one of the best among all villages. When the members of the DPMU as well as the Digital Green team traveled to the project villages for their field trips, they would use the data from COCO during the community level meetings. They would discuss the problems around disseminations and encourage farmers to adopt as many new practices as possible over multiple crop cycles.

As months passed by, Aarthi and her fellow extension functionaries mastered the art of disseminating a video and also motivating the farmers to adopt new practices. A dissemination did not remain just as a video show; it was a play-pause-discuss-play approach to elicit the farmers’ interest in adopting new practices. These late evening disseminations became a time when the farmers would gather at a place and discuss much more than the practice. When the disseminations get underway, the focus of course shifts to the practice. A range of questions and emotions get attached to the practice being discussed, with the room almost always having some farmers
who agreed from the beginning to surely adopt the new practice, some who were sceptics, and many who needed a little push to change their behaviors. Over the first decade, across nine states in India and across eight other countries, it was extension functionaries like Aarthi who brought about a positive change of behaviors in over 2.8 million farmers.

**New Tools, New Methods**

As Aarthi and her fellow functionaries mastered the Human Mediated Extension System, the field-level extension process got streamlined across locations. The district-level supervisors and policymakers at the state level could see the difference that it made. By the fifth to sixth year, the number of government departments, nonprofit organizations, and federations who had started using this extension system and the places in which this system was being used had dramatically increased.

This was also a time when Digital Green had started thinking about its new manifesto. It was time for change, time for a shift from being an innovator in the digital extension segment to becoming an innovator in the agriculture-technology domain.

![Figure 14-6. Basic processes of Digital Green Extension System. (Image courtesy Digital Green Foundation)](image)
Excerpts From the 2016 Digital Green New Manifesto

“We embody a curious, problem-seeking attitude that puts ourselves in the place where the people that we work with are, actively listens, and strives even when confronted by adversity on the inertia of the status quo.

“We innovate not for the sake of innovating, but to make an impact in the lives of the poor.

“We use technology to amplify good and partner with organizations and individuals that have the hearts and minds to realize its potential.

“We are committed to the long game of our moonshot by starting with the poor, and relentlessly seeking to improve ourselves.

“We will never be satisfied until poverty is history and every individual is able to live a life of dignity. We believe if we are successful, we will have worked ourselves out of a job and our culture will remain our legacy.”

With a new manifesto as its sounding board, the Digital Green team embarked on a brave and challenging journey of change. It was about going beyond the comfort zone of only implementing the now well-accepted Human Mediated Extension System and pushing into the new horizon of agri-technology. The team had started to conceptualize technological innovations and pilot them across multiple locations, with the aim to set examples of new ways to assist farmers to access information and services.

A Responsive Voice

With the belief that there is potential to augment behavior change and increase rates of adoption of new practices by supplementing the video-based approach with reinforced messages, Aarthi and the farmers she worked with were enrolled into an Interactive Voice Response System (IVRS). Through this automated technology, farmers could communicate through a computer-operated phone system using their voices or keypads. This was one of the first innovations that was scaled up. The systems for interactive voice response were built to create demand for the practices (based on the government partner’s priority) and included providing personalized advisories to farmers based on their crop stage, the soil type, and the predicted weather forecast.

Additionally, the functionaries received reminders, ensuring that disseminations are conducted at the right time and that these can contribute a lot to increased adoptions. While the system was nothing new, the way it was utilized was surely innovative. This was aimed at assisting farmers to achieve improved decision-making and hence better yield. This process was not only rolled out in Kanakaveedu but across multiple districts of Andhra Pradesh as well as many other states covering over 9,000 farmers.

“Initially I thought it would be like any other call-center person calling and disturbing me. But right in the first week I could understand that this process was surely going to be of use. I received calls to remind me of the next video I should disseminate and it also reminded the farmers about the next one they should watch. The best part was it provided the farmers with the opportunity to call in and hear all about the practices that they wanted to. Suddenly the demand grew. There was a time when I had to go about pulling farmers to come to meetings, now the farmers would know about the
upcoming dissemination and sometimes also reminded me in a friendly manner, if they would meet me on the street somewhere,” said Aarthi.

Overall, the intervention resulted in increased demand for services by new and existing farmers enrolled within the project, improved knowledge and better decision-making by farmers, increased adoptions, and improved crop production.

A Trainer Who Is Always By Our Side

Continuous capacity building of frontline extension workers is an essential part of an effective extension system. However, delivering these trainings (and any refreshers) in a scaled-up program is both costly and time consuming. Due to the sheer numbers and the logistics involved in repeatedly getting field-based extension functionaries into the training halls, like many other government departments, the DoAC–GoAP could offer limited in-person training-refreshers to its frontline extension force. Even though the department could afford it financially, it was not an economically viable option. On the other hand, Digital Green’s partner also knew that less contact with the extension force leads to lower performance. Together with the DoAC–GoAP, a virtual training process was established. The process provided on-demand access to video content with quizzes and allowed frontline functionaries to refresh and test their knowledge whenever they wished to and respond to farmers’ queries with greater ease.

“This was like a book in my hand, except for the fact that I did not have to search the pages but could immediately get to the essential sections in two or four touches of the screen. When I was provided with a phone by the department that had a large screen, little did I realize that I could actually gain knowledge through this device, which would be beneficial for me at my work. At one of the district-level meetings the Digital Green managers taught us how to get started on this ready reckoner or guide. We were told that we had to go through the information on about seven topics at our own pace. At my village, after all the work for the day was done, I used to explore all that was in there. I watched the first video and tried answering the first four to five questions about what I learnt from the video.

“This seemed so interesting that I got addicted to it and within the stipulated time finished all the seven courses which were allocated to me. My friends, who were functionaries in the nearby villages and I would always call each other to ask how many lessons each of us had completed. There was so much information about all that I needed to know that post training, if ever needed, I would refer to these practices at the field and could also show these videos to individual farmers on my mobile set, while explaining the concepts to them at their farms.

“The certificates that I received at the end of the course as well as the fact that I always had the lessons on my mobile boosted my self-confidence. The way I conversed with the farmers on the old as well as the new practices became much better. The farmers also saw this confidence in me and opened up to me. The continuous learning over the months provided me with an opportunity for lifelong learning and to reflect on my work. I felt connected.
I felt as if there was an expert who was always by my side, who was guiding me,” Aarthi reminisced.

The Digital Green team kept improving upon the virtual training process by collaborating with the teams from government departments as well as the technology service provider. Digital Green partners agreed that this process:

- Was a very cost-effective one for capacity building of frontline workers (saves resources for the government department),
- Saved time by replacing the classroom-based refresher trainings,
- Met the diverse training requirements of the extension functionaries,
- Helped to increase knowledge among frontline workers, and
- Resulted in effective disseminations by frontline workers due to improved skills.

The virtual training process targeted the problem of refreshers and capacity building at scale to teach the crop package of practices and spread uniform knowledge. The process was tested with 450 of the best extension functionaries within the government departments and then, because of its effectiveness, was opened to over 2,900 more users.
A Little Skill That Goes a Long Way

A little over a decade ago, Digital Green started with the vision of empowering extension functionaries to use technology. It was about “…using the power of technology and social mobilization to increase the efficiency of extension systems,” as its philosophy went. The basic premise was that if we can provide extension functionaries with appropriate tools, they would be able to motivate and assist farmers to transform their own behaviors toward adopting better practices and hence strive to attain a better quality of life.

The “normal” had to be changed by a process where the farmers are motivated by the members of their own community to adopt a “new and better normal.” This surely did happen. The application of a simple, cost-effective technology of using videos made by the community and the skills of human mediation attained by the extension functionaries helped them to motivate farmers to attain a new and better normal. That was a few years ago.

These days, a rapidly changing and ever-evolving ecosystem of Information and Communication Technology (ICT) provides a myriad of opportunities. While extension functionaries can be equipped with better skills and knowledge away from the formal classrooms, farmers too can attain soft skills that allow them to use communication technology and make important agronomic decisions about their crops and access markets as well as let markets and consumers find them.

Digital Green, through its new manifesto, continues to strive with partners and like-minded organizations to use the opportunities provided by this rapidly developing ICT ecosystem. It aims to bring about a positive change in the skills and mindsets of farmers and the people who serve them. We believe that by empowering both the farmers and the extension functionaries, through the use of technology, we can bridge the gap between the villages where they reside and the world outside. Digital Green sincerely wishes the whole world was just one single and expansive village, with motivated functionaries like Aarthi present everywhere to serve the people.

References


Note: Ideas and examples in this document also appear in part in the following Digital Green monographs:
- Digital Green Key Facts
- Digital Green in Health
- NRLM Partnership
- Quality Assurance in Digital Green
- Training in Digital Green
- Digital Green in Africa