

ENABLING A COLLECTIVE PROCESS OF LEARNING IN RURAL DEVELOPMENT

Our caravan of vans rolled up to the field office on a strip of road flanked by farmsteads and a patchwork of fields on each of its sides. The gleam of our vans against the late morning sun made our arrival seem otherworldly. The vans that got lost in the traffic of the high-tech city of Bangalore just 50 kilometers away now seemed sufficiently novel to create a stir of attention. From the tinted windows of our vans, we caught the glances exchanged between the field staff and members of the community, as they got themselves

organized. The director of the small non-profit that led the programs in the village had arrived.

I was eager to join the trip, as it was one of my first to check out the action in the field, but the discussions that we had now seemed obvious. The field staff shared reports on the trainings that they conducted and members of the community described the practices that they had taken up as a result: from setting up vegetable gardens to conserving local seed varieties. There were, of course, challenges like a long dry spell and grievances



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of field staff not getting adequately paid; however, the conversation felt somewhat contrived.

We essentially heard what we wanted to hear. The field staff and community members had been part of this routine before. They weren't intentionally lying or withholding information, but they were complicit to a code in which community members showcase their work to field staff, field staff to their leadership, leadership of development organizations to donors and policy makers. The incentive is often stronger to align accountability to those decision-makers at the top of this hierarchy rather than enabling farmers to achieve aspirations of their own.

Our Approach

When we began to develop what would eventually become the Digital Green approach, we made a conscious effort to see how this dynamic could be flipped, a decision arrived at both by design and necessity. Initially incubated as a research project at Microsoft Research, our group of engineers and economists had little experience in grassroots-level agricultural development. As technologists, we could only serve as enablers for organizations and individuals

already working in the field.

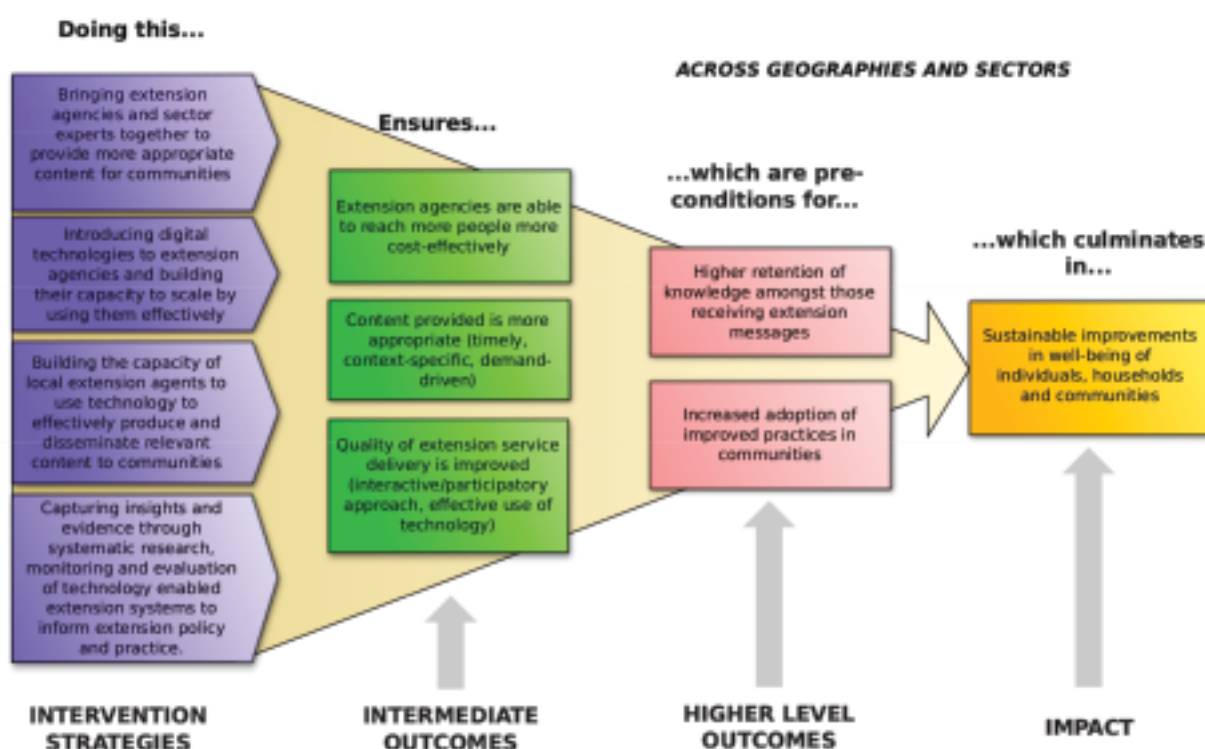
The prevalent agricultural extension systems in most developing countries can be costly, slow, and limited in effectiveness. Classical 'training & visit' programs generally involve an extension worker traveling from village to village, door to door, and speaking with a select number of individuals in 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.

At Digital Green, we combine technology with social organization. We partner with and train organizations that exchange agricultural technologies and techniques with smallholder farmers in parts of South Asia and Sub-Saharan Africa. Farmers, our primary constituents, remain at the center.

In the villages where we work, groups of farmers come

Digital Green's Theory of Change



together to view short how-to videos on agricultural practices. These videos are screened using battery-operated mobile projectors and are mediated by trained members of the community, who are mostly farmers themselves. These mediators answer questions, facilitate discussions to encourage group-based learning and motivate farmers to adopt new technologies. We have found that even more than technology, it is human mediation and group processes that drive learning and behavior change.

A separate cadre of members of the community is trained to produce videos. They create stories, and shoot and edit videos, which feature local farmers. The topics are identified with inputs from farmers and domain experts based on their needs and priorities. One of our early insights was the level of excitement among rural community members when they watched videos featuring peers. Before considering the economics of a practice, farmers would often first ask for the name of the individual featured in the video and the village he or she was from to determine its relevance. Compared with their past experience of receiving advice from extension agents which they often could not relate with, most farmers viewing the videos expressed their comfort and interest in receiving information from a source they could identify with. A small-scale controlled trial of the Digital Green methodology suggested that it is ten times more cost-effective than the classical agriculture extension methods.

Initiating Processes for Collective Learning

From our research-based inception, we realized that to be accountable to our mission, we needed to be accountable to the farmers that we serve. That is why Digital Green, from the very start, purposefully designed mechanisms to collect data and seek feedback from farmers at an individual level. Since data and feedback are especially useful when collected, presented and analyzed on a timely basis, we developed the near-real time system of data management.

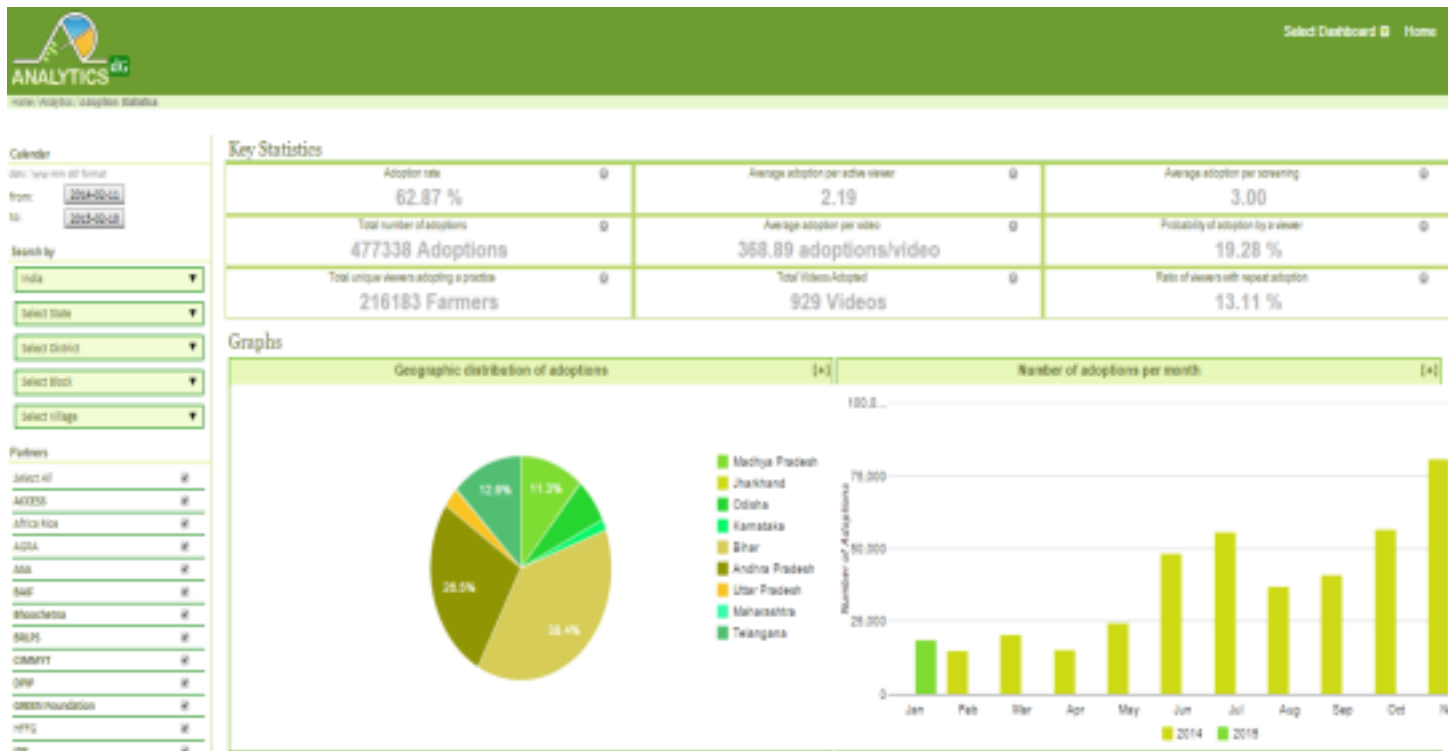
In each village, we trained extension agents to collect data using paper-based forms that could be filled at each farmer interaction at the time of producing a video, attending a video screening, or adopting a practice. Simple forms, no longer than a page, were used to

capture the details such as name and gender of individual farmers, their attendance during video disseminations, interests, questions and the change in their agronomic behaviors gauged through their adoption of new practices. Farmers can be quite vocal, sharing everything from the challenges they face on their farms to their entertainment preferences.

To analyze trends, track activities and assess our intervention outcomes, we needed to aggregate this individual feedback through a management information system. We developed a web-based application, called Connect Online | Connect Offline (COCO), which supports data entry even in locations where Internet connectivity is limited or intermittent.

Collection and entry of data is useless without have its analysis and presentation be accessible to individuals that can reflect and be informed by it. We developed systems to visualize data on our open-access analytics dashboards using tables and info-graphics showcasing monthly screenings, rates of adoptions, gender-wise participation and qualitative feedback on videos, viewed per geography, partner and time. This data helped assess the performance of partners and community workers, inform decision making and drive iterative improvements in content and programmatic processes. This programmatic data provides transparency among partner staff at state- and national-levels on the progress of activities in the field, while community feedback and adoption statistics for each video informs those involved in producing or exchanging content at district- or block-levels. Additionally, we have found that this open-access dataset can stimulate collaboration and, at times, healthy competition among partners reviewing the progress of peer organizations.

Our Analytics dashboards feature rich aggregate data, but we also realized the need to analyze the engagement of individual farmers with Digital Green. We developed Farmerbook, an open-access site showcasing the timeline-based activity feeds of the videos that each farmer has watched, the questions they asked, and the farming practices that they tried for themselves on a geo-located map. This data not only helps us validate the authenticity of the data through on-farm quality checks but also provides a mechanism for front-line extension agents and farmers to reflect on their own performance and that of their peers and to identify opportunities for potential collaboration and



sharing. Since the idea of Farmerbook is to connect the seemingly impersonal statistical data on our Analytics dashboards with the faces of the real farmers behind them, the question of privacy also became important. That was addressed by seeking consent from all farmers engaged with Digital Green. We envision that with the spread mobile technology and Internet access, farmers would soon be able to track their progress and see themselves with respect to one another on dynamically generated leaderboards using Farmerbook.

Through these systems, we have witnessed the development of an iterative cycle of knowledge creation and feedback exchange between those providing information and those receiving it. This break from the usual top-down approach to extension was making way for a platform in which those who typically make decisions – non-governmental organizations (NGOs), government officials, and researchers – could engage with farmers on a more individual level to include their feedback into programmatic decisions. From simply being the target of generic development messages, farmers are gaining a voice that can be heard.

Since data is only useful if we can trust its quality – a key focus has remained on quality assurance checks on the regularity and accuracy of data collection and entry through regular visits conducted by partners and Digital Green staff. Similar visits help maintain quality of

videos, disseminations and adoptions when observed and verified with the help of simple forms that rank quality of activities. Identifying videos, screenings and adoptions through random selection ensures neutrality and prevents selection bias. We have found that discussing the observations with appropriate extension agents during the visit itself helps close the feedback loop and enables stakeholders to together make sense of the findings while also creating common benchmarks for quality. Digital Green has been finding ways to triangulate data points received via COCO, quality assurance visits and monthly program monitoring site visits. Digital Green head office initiates monthly calls with regional and partner teams based on consolidated findings from quality assurance observations to track specific issues and identify appropriate actions. Using such data to assess, and where appropriate incentivize, performance of video production teams and community mediators has also helped improve data quality and timeliness.

Learning: Collecting, presenting and using meaningful data

Those who work closely with data know that collecting and presenting data is not the same as using data to inform programmatic decisions. Though we had developed our data management system to present

appropriate, high quality and timely data, we found that sometimes our partners and even our staff did not access this data at all.

With support from IDEO.org, we considered how capturing more meaningful and relevant data could provide insights that would better inform our decisions and those of our stakeholders. The design process involved a series of in-depth workshops, interviews, and iterative prototyping with potential users among our stakeholder community. This process helped question some of our implicit assumptions of putting data into use; both on what is captured and what is used.

We found that there were cases where data was being captured unnecessarily, resulting in needless burden on partners, loss of interest and delays in data collection to up to two to three months. On the other hand, we also found that potentially useful data was lost or not reviewed. For example, some of the extension agents who would visit farmers' fields to record the practices that they had adopted from the video screenings would note the challenges that individuals faced while adopting practices and the innovations that some had made with them, but we had not included a designated place that could be used to capture this data in our existing forms. We are now working to streamline the forms that are used to capture data and are piloting forms that have approximately 20% less data points than before with no negative effect on project monitoring or evaluation. We also learnt that individual-level farmer feedback was not always necessary and that it could be more cost-effective and at times more insightful to capture collective feedback from extension agents.

In addition, we found that our extension partners who had limited experience with data could be overwhelmed by having to navigate through a series of search and navigation parameters on our Analytics dashboard to find an indicator that they were interested in. We found it critical to segment these views to the dataset for each stakeholder based on their specific interests and abilities to derive utility from them. Our partners and team members, for instance, have mostly used this data for administrative tracking, but we have seen that, given the richness of the data being captured, there is an opportunity for this data to better support a process of reflection and review by the extension agents who

produce and screen videos and potentially even the communities themselves. We are now looking to generate curated, customized reports that address the specific needs and interests of each stakeholder including extension agents and farmers. We are also increasingly trains extension agents involved in the extension systems of our partners to produce videos, mediate group screenings, and capture data and feedback. For those involved in facilitating the screening of videos, this training includes a combination of technical aspects, for instance, handling a projector, and softer elements, such as how to ask open-ended questions and the importance of maintaining eye contact with a group. For a long time, Digital Green contended with the question of how to build the capacity of video producers and mediators so that they feel accountable and responsible to their peers in their respective communities.

Initially, we emphasized the building of their technical competencies. Though extension agents would learn how to operate a projector or how to perform a particular farm practice, we found that they did not always see how those skills could enable them to become agents that could catalyze change more broadly in their own community. We found that some would combine their existing extension activities, like farmer field school and on-farm demonstration programs, with the video screenings, while others focused solely on disseminating videos. Many of these individuals had not had an opportunity to reflect on their role within the community and its aspirations for development. These insights emerged from conversations that we facilitated between some of our partners and the extension agents they work with to map the history of their relationships and the vision they had for themselves. This exercise essentially enabled these extension agents to see the set of tasks that they were trained on and incentivized for, in the context of a bigger picture that they could help define.

Based on these preliminary discussions, we sought to see how elements of this reflection process could be institutionalized. We modified our training program to provide time and space for extension agents to deliberate on their understanding of their current role as well as their vision for their communities. We

designed activities to help participants link the change they wanted to see in their community with the individual impact that they could help trigger. In one such activity, groups of trainees follow a set of instructions to complete a task that are communicated either orally, through a document, or via a video. By enabling extension agents to see for themselves the support that technology can provide, we have found that they developed a greater sense of ownership for utilizing it to complement their existing work on a day-to-day basis.

We also found that extension agents were motivated to work to improve the welfare of their fellow community members when they could visualize how this could tangibly take place. With this in mind, more sessions were added to enable extension agents to reflect on the fact that they are not just channels for routing messages to communities, but they are also active agents who can facilitate, probe, and encourage their peers to take up improved agricultural practices through discussion and debate. The training also encourages them to reflect on how the quality of the video and the manner in which its screening is facilitated can impact the response and ultimate adoption of the practices by farmers in their community. We have found that extension agents that have participated in these exercises have felt empowered as thought leaders within their own communities.

The re-conceptualized training program for extension agents has also translated into a change of perceptions among the farmers that they work with. Extension agents who have undergone our training sessions listened more, judged less, and were more inclusive in group discussions compared to those involved in earlier programs. The farmers also felt that their point of view was increasingly heard and understood, and their questions were being answered. For many farmers, this represented the first time in a development intervention in which their feedback was proactively requested and responded to.

To further improve trainings, Digital Green has started capturing data through post-training tests; feedback forms and trainer-to-trainer observations, which are analyzed through an online system for tracking the performance of trainers.

Learning: Catalyzing voices through networks and knowledge platforms

As the scale of our approach expands, we have become increasingly conscious about our role as a facilitator in bringing together a disparate set of stakeholders together toward building a shared vision for improving the lives of rural communities. We have found that we can serve as facilitators to build an infrastructure of networks; knowledge platforms and communities of practice that promote equality, unity and diversity in voice.

For instance, we found that we could serve as a catalyst to link agriculture research and extension so that the messages disseminated to farmers return sustained, positive value. In the state of Bihar, we partnered with an NGO, called Action for Social embedding in our trainings a way to build the competencies of our constituents in reading and making sense of these reports, while creating systems to engage with the findings focused towards follow-up.

Since we now engage with a much wider set of stakeholders that extends beyond extension agents and farmers, and now includes a combination of extension systems, research agencies, donors, and the general public, we have sought to see how our data management can be leveraged to support each of these groups in areas that might extend beyond tracking the production and distribution of videos. For example, we are working with the Ministry of Rural Development to customize COCO to capture and analyze data on the mobilization of self-help groups, bank linkages, recruitment of human resources, and other initiatives.

Learning: Reflective practice for strengthening relationships

Just as a collective learning process can be used to inform programmatic decisions, it can also be used to strengthen relationships within and between institutions. Strong relations in turn perpetuate a mutually reinforcing cycle of learning, especially when there exist collaborative and participatory spaces for reflection.

The Digital Green approach represents a combination of

a top-down and bottom-up approach. Community members drive the content production and distribution processes; however, these activities are embedded within the operations of an existing extension system, which provides coordination and technical support to ensure that these efforts lead to positive outcomes. At the village level, the mediated screening of videos seeks to affect the agricultural practices applied by farmers. At an institutional level, the broader Digital Green approach seeks to affect the existing extension system of our partners.

Like any new practice, the changes that the Digital Green approach introduces have a learning curve associated with their acceptance and integration with our partners. Unlike some systems that expect information or communication technology alone to deliver useful knowledge to marginal farmers, our approach has focused on amplifying the effectiveness of existing, people-based extension systems. These extension systems bring significant domain expertise and experience that can link information with the actions that farmers can take across an agricultural value chain. They also have trust already established among groups of farmers that they have helped organize and typically have a network of extension agents

recruited to support their interventions. Our approach builds on these foundational interventions; however, it also brings about significant structural change within our partners. This includes aspects like systematizing the knowledge base of extension agents, regularizing schedules for training farmer groups, and a mechanism to capture data and feedback from individual farmers to inform the direction of program interventions.

When we began as a research project, we approached organizations that were willing to experiment with our idea. This was a necessary and useful first step to prototype and gain insights around issues like the type of individuals that should appear in the videos and the mode of distributing videos. We organized workshops to share the concept of our approach among our partners to build mindshare for it. Despite these steps, several of our early partners had an impression that this video-enabled initiative belonged solely to Digital Green. These groups initially considered any issue connected to videos as being the responsibility of Digital Green and had a limited sense of institutionalizing the end-to-end approach for themselves. Often, we would receive high-level interest for our approach among the senior leadership of our partner organizations. However, we also found it critical to get buy-in from the mid- and



grassroots-level staff of these agencies, since they would be the ones to implement and benefit from the approach. We also sought to see how they could become not just adopters of the Digital Green approach but to also contribute, and even champion, its adaptation and evolution more broadly.

With growing demand for these exchanges, we broadened our collective learning agenda to expand beyond the voice of our primary constituents to include those of our partners, who had till then only used informal structures for feedback. Digital Green initiated a process of bringing together a variety of stakeholders to define a shared vision. We organized a series of workshops at multiple field sites: first with members of the farming community, then with the extension agents working with them, and finally with staff members of our partners. In contrast to a typical stakeholder interview or survey, the aim of these workshops was to collectively reflect on the journey of our collaboration and the relationships between stakeholders, and to strategize the direction of the intervention. Roleplaying, games and mapping exercises were used to make participants comfortable, build trust, avoid judgment and collectively reflect on feedback. Moderators were trained to be sensitive to inherent power dynamics and translators briefed to be precise, quick and accurate. These exercises corroborated some of our early insights, such as the criticality of socializing content in the local context, and also revealed new ones, like the limitation of relying on monitoring data alone to assess project performance. These discussions with stakeholders provided a richer, more holistic view on several issues, like the interests of farmers, the growing aspirations of extension agents, and the flow of communication between Digital Green and partner staff.

To continue to develop its partnerships, Digital Green has committed to building its own team's capacity as relationship managers through an appreciation of concepts such as being of service, coaching, and supportive supervision and is imbibing a shared vocabulary for creating safe spaces and active listening. Beyond these workshops, we are now developing survey tools to assess the health of our current partnerships as well as checklists to help identify new collaborators with a shared vision. This includes ensuring that we agree upon a common set of principles – in particular, localized content production, mediated dissemination,

and data and feedback mechanisms – that guide our work while remaining open to learning and adaptation. To stay accountable to our ever-increasing number of partners, we are also seeking channels to facilitate anonymous feedback and to learn from failures.

Learning: Building a culture of learning, ownership and accountability

To strive for sustained impact, there is need to build a culture of learning, ownership and accountability in organizations and its collaborators. One way is to strengthen relationships. We have found that both institutionalizing systemic changes and building capacities can also do this.

At Digital Green, we've developed our team to optimize collective learning. With our initial partners, we embedded members of our staff in their offices to provide handholding support to drive the project forward. We found that this often limited partner's ownership towards the approach and inhibited cross learning. In response, we restructured ourselves by establishing regional offices to provide the necessary orientation and backstopping support to our partners in a particular geography from an appropriate distance. We found that this approach not only increased the level of ownership of our partners, but that these offices also served as centers for exchanging learning among our partners and even members of our own team. As we established regional offices to support our partners, we also set up directorates within the team to focus on aspects of quality assurance, research and learning, and training that could cut across all of our programs. Like most organizations, our team comes together through a variety of meetings. As we have grown, we have found that there is a need to give dedicated space for reflection and learning so we now set aside one day every month for the organization to come together to do so in a conscious manner.

As Digital Green's team has grown, there has been an increasing need to create neutral spaces to air concerns, provide feedback and seek direct guidance from different levels of the organization. This was felt deeply during a recent retreat in which the number of team members who had joined in the last year outnumbered those who had been with the organization longer than that. We have sought to institutionalize an open door



policy, dedicated weekly open house slots with senior management and a set up web-based forum for anonymous feedback.

We have also found that enhancing the confidence and skills of staff, partners and constituents, in an appropriate manner is key to developing a culture of learning, ownership and accountability. Indeed, one of Digital Green's central roles is to build capacities. Rather than training farmers directly, Digital Green practices. Around the same time, the International Rice Research Institute (IRRI) was working on a large-scale program to improve grain production through the Cereal Systems Initiative for South Asia (CSISA). CSISA had developed a package of practices that had shown success in the field. ASA, however, expressed reservations in taking this information directly to the farmers that they were working with.

We had to develop a process to avoid undermining the voices of both CSISA and ASA by leveraging both ASA's expertise and experience of working with communities and the latest technologies and practices that CSISA had identified. We facilitated a process for CSISA to review the prevalent practices followed by farmers as well as the ones promoted by ASA to identify areas where CSISA's expertise would represent an improvement or fill a gap. Next, CSISA showcased the utility of their practices by adapting and demonstrating them on the fields of farmers that ASA was already working with.

This approach respected the existing practices of farmers and ASA's interventions, ultimately increasing ASA's ownership to produce videos on the practices that CSISA introduced.

One of the practices CSISA recommended sought to address a concern that farmers expressed on not having adequate mechanisms to properly store grain and seeds. We worked with ASA, with support from CSISA, to produce videos on the use of 'super bags', which could be used for safe storage. As the practice was shared more widely, on review of farmer feedback in Digital Green's data management system, we learned that the video did not precisely answer where farmers could purchase super bags, how much they would cost, and what the precise benefits would be. At the same time, another group of farmers wondered whether the super bags, which were designed for protection against insects would also be robust protection against rodents, which they perceived as a greater menace. Such feedback helps inform the production of new videos to address frequently asked issues. In this case, it also informed CSISA's research agenda and the team began a process of identifying an alternative solution, thus closing the loop to the iterative cycle of knowledge creation.

Feedback from farmers themselves cut through the rhetoric of ideologies that often hamper action in agricultural development and engendered a sense of humility by working from the perspective of farmers.

For us, at Digital Green, this experience also served to remind us that although we could serve as a facilitator to bring organizations together, our partners would ultimately need to drive this process forward to create long-term impact.

As we grow, we are keen to enable the process of building networks and shared learning in a manner that supports the unique interests of each stakeholder while ensuring that these partnerships are mutually edifying in nature. This includes, for instance, linking the extension agents that graduate from our training programs, the extension and research partners, and the donors and policy-makers that we work with to learn and share with one another. Digital Green is also building networks with the wider extension community and the general public. With the increasing coverage and bandwidth of telecom networks, Digital Green is developing an online-offline courseware platform to engage researchers, extension professionals and farmers to not only view and comment on videos but also to drive greater transparency and accountability for the knowledge and data being exchanged. Digital Green is also developing a virtual training institute, a resource for training extension agents using videos. This has the potential of building a culture in which the same approaches that are used to exchange practices among farming communities can also be used to develop a community of learning among extension agents.

We have also helped constitute communities of practice, both within Digital Green and with our partners, to reflect on the variety of ways in which our approach supports the efforts of each stakeholder.

Conclusion

The Digital Green approach facilitates shared learning in agriculture. To some extent, that can be attributed to our focus on enabling processes for collective learning across our organization and our partners.

Looking back at our journey, we have made some progress in the use of data and feedback and successfully emphasized the need for reflective dialogue between key constituents. This to us is evident through our increasing ability to take informed decisions that account for the voices of all stakeholders while strengthening relationships.

Despite these successes, there is still substantial room to develop a systemic culture of learning and create platforms and networks for sustained knowledge exchange among all of the stakeholders that we engage with. As we go forward, we are confident that only by institutionalizing our core values of humility, excellence, accountability, empathy and integrity can we continue to learn with the ultimate aim of enabling every individual to live a life of dignity.

Learning Summary

Digital Green values the process of collective learning to make iterative improvements in project design, operation and evaluation by capturing data and feedback from all its constituents including individual farmers.

Processes and tools for feedback:

- In each village, we collect individual farmer details, attendance, expressed interest, adoption of videos and questions at each of the weekly or fortnightly interactions during screenings and adoption verifications through paper based forms
- We record this data in a software called Connect Online | Connect Offline (COCO) which is analyzed near-real time as per geography, partner and time visualized on open access analytics dashboards
- We assess quality of activities and performance of extension agents through monthly observations of randomly selected videos and screenings, checks on data quality and verification of adoptions
- We develop spaces for reflective dialogue between

farmers, community workers, partners and wider agricultural extension community through facilitated monthly meetings and participatory workshops

Lessons learnt:

- Collecting and presenting data is not the same using it. Collecting timely, appropriate and segmented data which can be freely accessed through customized presentations and made sense of through regular engagement with clear incentives can drive programmatic improvements
- Reflection through collaborative and participatory spaces can help build trust, align values and account for power dynamics between collaborators in development and in turn strengthen relationships
- Building a culture of learning, ownership and accountability by both institutionalizing systemic changes and building capacities can drive sustained impact

Equality, unity and diversity in voice can promote mutual accountability, innovation and complementarity when catalyzed through an infrastructure of networks, knowledge platforms and communities of practice.