

VIDEO-BASED AGRICULTURAL EXTENSION

Analysis of a pilot project in Ethiopia

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Since 2014, Digital Green and the Government of Ethiopia have been piloting a project to introduce a community-centric video approach to agricultural extension provision.¹ Digital Green’s approach has the potential to transform extension in Ethiopia via a fairly simple impact pathway. By providing a cost-effective approach to information dissemination, video-based extension can increase the adoption rate of productivity-enhancing agricultural technologies and practices by smallholder farmers, including increased adoption by women. The Digital Green approach could also improve data collection and analysis. This note, based on a more detailed project report,² summarizes findings and recommendations that point the way to expanded use of video-based agricultural extension.

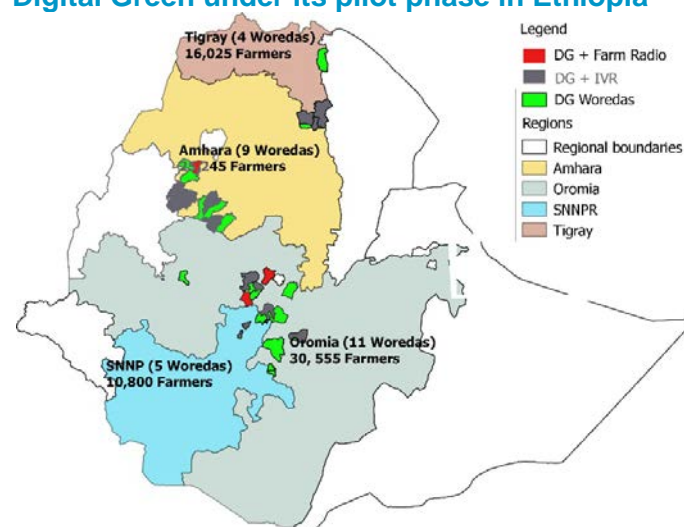
ETHIOPIA’S GRAND EXPERIMENT IN AGRICULTURAL EXTENSION

Ethiopia’s extension system has pursued many small experiments and large programmatic changes during the past two decades. Recent reforms in the system highlight the Government of Ethiopia’s commitment to decentralizing extension management to the regional state, *woreda*, and *kebele* levels; introducing data-driven, results-based management throughout the system; and leveraging partner organizations in the civil society sector and development community.

A pillar of these reforms has been the large increase in agricultural extension agents (Development Agents (DAs)) and Farmer Training Centers (FTCs). Approximately 73,000 DAs have been trained and 18,000 FTCs constructed during the past 10 years. This investment reflects the Government of Ethiopia’s effort to accelerate agricultural growth—a commitment set forth under the broad umbrella of Ethiopia’s Growth and Transformation Plan (GTP).

The Digital Green pilot project aims to improve Ethiopia’s public extension system by broadening its reach through the use of cost-effective information and communications technologies (ICTs). The

Figure 1. Location and type of interventions by Digital Green under its pilot phase in Ethiopia



Source: Digital Green.

innovative approach uses multiple media channels—video, radio, and interactive voice response (IVR)—to reach a broad and diverse audience of farmers with information on key extension topics including improved agronomic practices, nutrition behaviors, and market prices. Several crops are targeted, including teff, wheat, maize, and chickpea.

The core approach is being used in 24 *woredas* (Figure 1). DAs are armed with rechargeable video projectors and short videos on selected technologies and practices that are produced by local bureaus of agriculture and their development partners using relatively low-cost video equipment. They use these components in screening sessions and facilitate discussions conducted with local development groups or other forums—all at a very local level and with the support of model farmers drawn from within the community. The entire approach is supported by back-end data and analytics, including field-based collection on participation and uptake indicators and electronic dashboards for monitoring performance, all of which is integrated under Digital Green’s “Connect Online—Connect Offline” (COCO) platform.

In this initial four-year project (2014–2018), Digital Green aims to reach 144,000 farmers by the end of 2017, followed by an additional 76,000 farmers by the end of 2018 contingent on the development of a joint rapid scaling plan with the Ethiopian extension system. This scaling plan would aim to reach 6.7 million households in rural Ethiopia by 2021, which is the endpoint of the GTP.

ANALYSIS OF THE DIGITAL GREEN APPROACH

Analysis examined four key questions facing the planned expansion of the Digital Green approach in Ethiopia.

1. Is there an inherent tradeoff in the Digital Green approach between localized video content, on the one hand, and video production costs and quality that may affect farmers' uptake of technologies promoted in the videos, on the other hand?
2. What roles should DAs, model farmers, and other community members play in the Digital Green approach, particularly in disseminating videos, leading learning events, and collecting data on technology uptake?
3. What kind of gender-sensitive approach is most appropriate for promoting the Digital Green approach in Ethiopia?
4. Is the Digital Green approach compatible with Ethiopia's extension system at the *woreda* level, and does the approach—including the COCO platform—add value?

Looking at these questions can shed light on potentially important opportunities and challenges that can be explored further with more robust tools of analysis as the Government of Ethiopia and Digital Green roll out their activities in the next few years.

Data and data sources

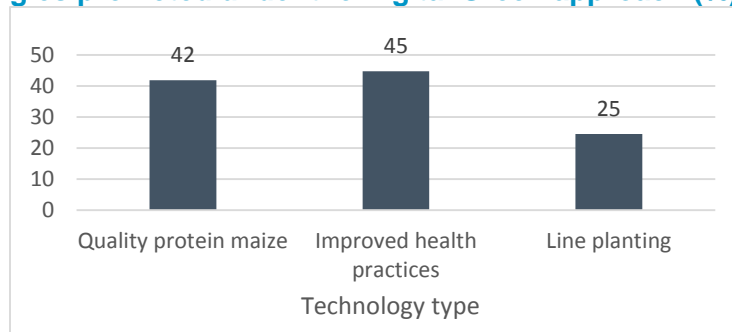
Answers to these questions draw on multiple sources of data and information including COCO data on 33,560 viewers, 121 videos, and 7,810 screenings events; key informant interviews with extension system stakeholders; focus group interviews with farmers; direct observation of video dissemination sessions; a self-administered DA survey and experimental games conducted with DAs to gather insights on job performance, incentives, and motivation; and analysis of government, academic, and other documents. While analysis of this data suggests associations, caution should be taken not to infer causal relationships.

Findings

Findings from Digital Green's pilot suggest the approach can increase farmers' access to extension services and increase the likelihood of uptake and adoption of new technologies and practices. Despite the low adoption rates recorded across a wide range of technologies in Ethiopia, farmers participating in the Digital Green

activities exhibit high levels of interest and adoption (Figure 2). The Digital Green approach may also help overcome gender norms that otherwise constrain women's access to information.

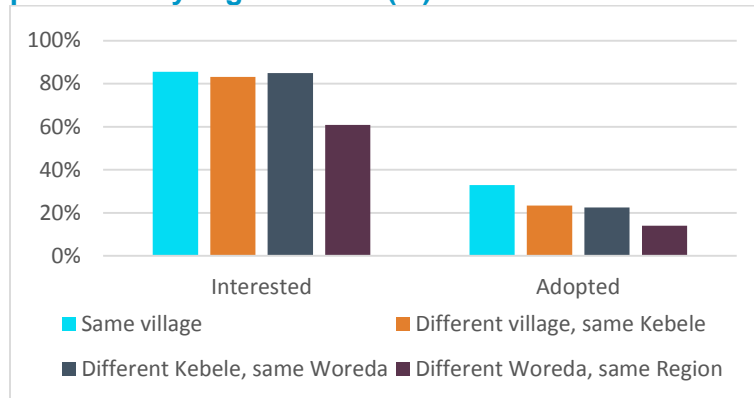
Figure 2. Adoption rates for three different technologies promoted under the Digital Green approach (%)



Source: Authors, based on COCO data. Note that “Quality protein maize” (QPM) denotes the cultivation and preparation of QPM for household consumption; “improved health practices” denotes include improving antenatal care, improving childbirth, reducing maternal mortality and morbidity, and improving postnatal care; and “line planting” denotes line planting with lower seeding rates and other recommended management practices for teff, wheat, and maize.

Localized video content. Findings suggest that localized video content—a hallmark of the Digital Green approach—has strong associations with adoption. Analysis of COCO data (Figure 3) indicates a 26 percentage point increase in the probability that an individual would be interested in the technology if the featured farmer was located in the same *woreda* compared to a situation in which the viewer and character were from different villages. Findings are similar for adoption, suggesting that the potential advantages to localized video production are worth exploring further.

Figure 3. Interest and adoption rate by geographical distance with featured character for all technologies promoted by Digital Green (%)



Source: Authors, based on COCO data.

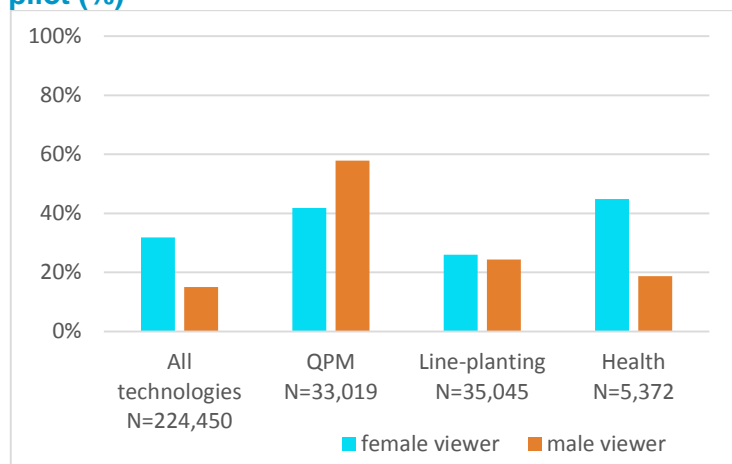
Extension access, participation, and targeting. Findings suggest that the Digital Green approach can be refined to better target localities and farmers who stand to benefit from the approach. In its pilot phase, Digital Green concentrated 80 percent of its work in *woredas* also targeted under the Agriculture Growth Program

(AGP), which focuses on relatively higher-potential *woredas*. Within these *woredas*, Digital Green may have also targeted higher performing *kebeles* and, within these *kebeles*, better performing development groups. Although this purposive selection of sites and participants is justifiable at the pilot phase, more can be learned about the scaling potential of the Digital Green approach by expanding to lower-potential sites and households where access to input and commodity markets, poverty, and other factors might be more significant constraints.

Digital Green’s approach also has potential to reach more types of farmers within these sites and communities. Model farmers (MFs) typically comprise 20 percent of participants, and tend to have greater access to extension services already. Observations from video dissemination sessions revealed that MFs tend to dominate group discussions, eventually shifting focus away from the concerns of the “average” farmer. With non-MFs constituting the bulk of the targeted population, there are opportunities for Digital Green and its partners to better focus dissemination to promote participation of non-MFs.

Gender inclusiveness. Ethiopia’s extension system is not neutral with respect to gender: DAs are predominantly male, as are development group members. COCO data indicate that only one in four viewers of Digital Green’s videos were women, with similar proportions among facilitators.

Figure 4. Adoption rates, by sex and technology, among farmers participating in the Digital Green pilot (%)



Source: Authors, based on COCO data. Note that results presented here are obtained from linear probability estimations. The dependent variable captures whether or not the farmers has self-reported as having adopted the featured technology or practice. Bars on top of the histogram provide 95% confidence intervals for the estimates. Standard errors clustered at the group level.

Even this figure may overstate female participation in video dissemination activities related to agriculture, since a large subset of Digital Green’s dissemination activities were specifically targeted to women’s groups.

Despite this disparity, women were more than twice as likely as men to have adopted a technology featured in the videos they viewed, although this difference varies across technologies (Figure 4). Again, care should be taken in interpreting these results since these estimates may capture the influence of community-based gender norms or unobservable individual attributes.

MAINSTREAMING THE DIGITAL GREEN APPROACH

Ethiopia’s extension system relies on the commitment and tireless effort of its staff. Their work entails paper-based data collection tasks designed to measure progress against technology adoption and crop production performance targets. These indicators are, in turn, used to measure individual performance.

DAs spend substantial time on these data collection and reporting activities, dedicating 20 percent of their time to monitoring adoption and output by farmers, and another 7 percent to report writing. DAs receive a grade based in part on these data. Because grade level determines advancement, promotion, bonuses, in-kind rewards, and social recognition, there are in-built incentives for DAs to over-report achievements and few penalties for misreporting.

Importantly, the data that DAs collect—whether accurate or not—are rarely used to improve or refine local extension strategies and approaches. This may be partly due to the organization and management of Ethiopia’s extension system, but may also be associated with the lack of a proper data interface at the *woreda* level.

Digital Green’s COCO platform offers an alternative to the current data collection system. COCO data is typically collected by DAs on paper, and later digitalized at the *woreda* level. Data are automatically synchronized with Digital Green’s main database via internet connection. At the *woreda* level, the COCO platform automatically computes relevant statistics on technology dissemination and farmers’ adoption, and presents it in a dedicated user-friendly dashboard.

The systematic collection of individual data on farmers’ attendance at meetings, their interest and use of the technology featured in videos, and other more proximate data points might improve the timely assessment of DAs’ dissemination efforts. The data can be further used to enhance understanding of adoption patterns and trends. Yet while it has been introduced in Digital Green’s pilot *woredas*, extension staff make very limited use of COCO data, citing concerns that COCO data collection has mostly added to their existing data collection responsibilities. Thus, opportunities to explore integration and mainstreaming should be explored.

RECOMMENDATIONS

As Digital Green and its partners expand to new *woredas*, *kebeles*, and farmers, several topics require closer consideration. Note that only a well-designed process and impact evaluation of Digital Green's approach can provide more robust evidence on what works well in this program and what can be modified or adapted further.

- **Keep video production local.** Local video production is highly valued by extension staff, suggesting that it is inadvisable to shift video production to a level higher than the target *woreda*. However, video production teams at a higher level (such as zonal) may be developed to provide support to local video production teams and maintain quality.
- **Keep video content local.** Local video content is appreciated by farmers, and should be defined collectively by farmers, DAs, and extension staff at the *woreda* level.
- **Improve planning and communication with farmers.** Both planning and communication of topics can be improved so that farmers can better self-select or self-organize into events relevant to their needs.
- **Explore the COCO platform further.** The platform may have the potential to improve monitoring and planning processes, and to improve data collection and analysis tools. Consider investing in its adaptation, integration, and expansion.
- **Focus on variations in farmer experience.** Focus COCO indicators less on adoption and more on farmers' experiences with new technologies and practices. Data on trialing, adaptation, profitability, and variations in farmers' experiences, as well as better identification of farmers by type (for example, model and marginal farmer; large and small landholder) may provide more strategic insight into farmers' learning processes and the opportunities for promoting technological change.
- **Facilitate broader access to equipment.** Digital Green relies heavily on the use of relatively low-cost equipment, but there are clear bottlenecks in access, maintenance, and powering. A larger supply of equipment, alongside identification of qualified maintenance and repair units, might address these constraints.

¹ The Digital Green approach is being undertaken in partnership with the Ethiopian Ministry of Agriculture (MoA), the Agricultural Transformation Agency (ATA), the Ethiopian Institute of Agricultural Research (EIAR), and regional bureaus of agriculture, with funding from the Bill & Melinda Gates Foundation and other donors.

- **Retain DAs as lead facilitators, but engage model farmers.** Although model farmers can be useful in local dissemination events, DAs still appear to be the more appropriate means of introducing new technologies and practices. Model farmers are currently not sufficiently trained to manage the Digital Green approach at a local level.
- **Allocate other key responsibilities to model farmers.** Model farmers may be best suited to monitoring farmer trialing, adaptation, and adoption of new technologies and practices in their respective development groups and immediate communities. Engaging model farmers in data collection may reduce DA workloads and could avoid the misaligned incentives that lead to over-reporting. Further exploration into incentives for model farmers to engage would be useful.
- **Encourage broader participation.** In a group event attended by individuals with different skill levels, social status, or farming experience, certain types of farmers tend to ask all the questions, which can steer discussion toward their particular needs. DAs need to receive training on facilitation to encourage broader participation.
- **Encourage female participation.** There may be good reasons not only to engage women as distinct participants in the Digital Green approach, but also as complements to men who are also engaged by Digital Green. There is much to be learned from observing the interactions between men and women who learn about the same technologies and practices.

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² Bernard, T., S. Makhija, K. Orkin, A.S. Taffesse, and D.J. Spielman (2016), Assessing the Impact of Digital Green's Video-based extension Approach to Promoting Technology Adoption among Smallholder Farmers in Ethiopia: A Feasibility Study. Addis Ababa / Washington, DC / Oxford: International Food Policy Research Institute. Please contact Tanguy Bernard (t.bernard@cgiar.org) for a copy of the report.