Digital Integration to Amplify Agricultural Extension in Afghanistan (DIAAEA)

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Final Program Report

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Submitted by:
Digital Green Foundation
A Gulzar, Project Officer
D6, Clarion Collection
Shaheed Jeet Singh Marg
New Delhi 110016
India

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Acronyms

AAEP-II	Afghanistan Agriculture Extension Project-II
AAEP-WIA	Afghanistan Agriculture Extension Project – Women in Agriculture
AOR	Agreement Officer's Representative
CBCMP-II	Capacity Building and Change Management Program-II
CHAMP	Commercial Horticulture and Agriculture Marketing Program
COCO	Connect Online | Connect Offline
DG	Digital Green
DAIL	Department of Agriculture, Irrigation and Livestock
DIAAEA	Digital Integration to Amplify Agricultural Extension Afghanistan
GIRoA	Government of the Islamic Republic of Afghanistan
GSE	Generalized Self-Efficacy
IVRS	Interactive Voice Response System
MAIL	Ministry of Agriculture, Irrigation and Livestock
MOU	Memorandum of Understanding
NHLP	National Horticulture and Livestock Project
PMC	Project Management Committee
TAC	Technical Advisory Committee
USAID	United States Agency for International Development

Executive Summary

Digital Green implemented the 15-month *Digital Integration to Amplify Agricultural Extension in Afghanistan* (DIAAEA) pilot project from November 30, 2014 to February 29, 2016 in partnership with Afghanistan's Ministry of Agriculture, Irrigation and Livestock (MAIL), the World Bank-assisted National Horticulture and Livestock Project (NHLP) that is housed under MAIL, and the USAID-supported Commercial Horticulture and Agriculture Marketing Program (CHAMP). The project exceeded all of its key targets related to videos produced, and after extension in the disseminations, total adoptions, training, and women's involvement, and helped to build a strong interest and commitment among MAIL and NHLP to integrate Digital Green's video-enabled approach in future public extension activities.

Under Digital Green, DIAAEA worked to test and refine its participatory, video-enabled approach to public agricultural extension within the context of Afghanistan in order to improve agronomic practices and production and achieve two specific objectives:

> Obj 1: Strengthen the soft and ICT skills of public and private extension agents and other community-based service providers to effectively engage and mobilize farmers, thereby accelerating the sustained adoption of new practices and tools.
>
> Obj 2: Refine the Digital Green approach in Afghanistan and build an evidence base for effective extension programs in areas of agriculture, nutrition, and health by experimenting with new modalities to understand how Digital Green's technological platform and service delivery components can be optimized for the Afghan context.

Activities were carried out in Shakar Dara, Mir Bacha Kot, Farza, Kalakan, Qarabagh, Guldara, and Paghman districts in Kabul province and Beshood and Surkh-Rōd districts in Nangarhar province.

The project trained 200 individuals working in Afghanistan's public-private extension system as video producers, video disseminators, video editors, or data entry operators to support the delivery of Digital Green's ICT-enabled approach. Among these, 158 extension agents and lead farmers (60 female, 98 male) were trained as video disseminators who, following their training, facilitated 1,588 screenings of 26 locally-produced videos using battery-operated mobile projectors to 5,073 farmers across 354 farmer groups in 269 villages. Of these farmers, 2,258, or 44.5%, were women. 1,234 farmers (490 female, 744 male), or 24.3% of all farmer viewers, applied new technologies or management practices as a result of USG assistance, with 637 farmers applying two or more practices).. Digital Green trained 11 MAIL staff members on tits video-based approach during two trainings held in Kabul in April and May, 2015. Five members of NHLP staff, one CHAMP staff member, and one local Digital Green staff member attended a training-of-trainers (TOT) on Digital Green's approach in India in December, 2015, and are now positioned to support future training needs. Though invited, MAIL staff were unable to attend the TOT due to difficulty in obtaining visas.

Digital Green also conducted scoping studies to explore the effectiveness of using mobile phones, including an interactive voice response system (IVRS), to support data collection, monitoring, and quality assurance. Working with a sample size of 43 of 244 eligible farmers, the quality assurance survey, conducted in September, 2015, demonstrated that phone interviews may be a reliable way to collect data on practice adoptions, with 97.6% of farmers reporting their adoption and key message recall correctly via phone (95% confidence interval [93, 10.2.1]). The IVRS testing met with less success, with only 80% of farmers answering

and 20% responding to calls. However, the study provides useful recommendations for further IVRS testing and maintains that IVRS might be a viable means to overcome the challenges of low literacy and insecurity in Afghanistan.

The project's cumulative outputs, coupled with the deepening level of interest and commitment on the part of MAIL and NHLP to integrate Digital Green's video-enabled approach into their public extension services signals the viability and value of the approach in Afghanistan.

Overall Description of Activities and Accomplishments

Activity reporting is organized according to the project's approved work plan, in an effort to account fully for all activities undertaken with USAID support.

Activity 1.00 Establishing relationships with government and NGOs

	Activity	*Status*	*Key Accomplishment / Output*
1.01	Conduct scoping survey to identify partners	Completed	Knowledge informed partner selection
1.02	Launch project	Completed	Clear roles and responsibilities in place
1.03	Understand extension system and identify implementing partners	Completed	NHLP, CHAMP, and MAIL confirmed as key strategic and implementation partners
1.04	Finalize work plan with USAID	Completed	Work plan approved
1.05	Sign sub-grant and finalize work plan with MAIL and other implementing partners	Completed	MOUs/Agreements signed and work plans agreed to with MAIL, NHLP, and CHAMP

Digital Green launched the DIAAEA project in consultation with USAID/Afghanistan via a conference call to review the grant agreement and clarify roles and expectations. Immediately after, Digital Green's Deputy Director for Training and Chief Executive Officer visited Kabul and met with organizations involved in providing and/or supporting public, private, and civil society-based extension services, including NHLP, MAIL, CHAMP, the Afghanistan Agriculture Extension Project (AAEP-II), the Regional Agricultural Development Program-North, Aga Khan Foundation, CAB International (CABI), Financial Access for Investing in the Development of Afghanistan (FAIDA), and the Capacity Building and Change Management Program-II (CBCMP-II). The aim of these introductory meetings was to understand each entity's expertise, scale of interventions, and the strength of their relationships with communities in order to assess collaboration opportunities. Digital Green prioritized partnerships with NHLP and CHAMP as both entities offered already-assembled and trained extension networks in the targeted districts of Nangarhar and Kabul provinces.

During the project's first quarter, Digital Green worked with USAID to finalize the DIAAEA work plan, monitoring and evaluation plan, branding strategy and marking plan, and environmental review and assessment checklist.

ACTIVITY 2.00 Registration and procurement

	Activity	*Status*	*Key Accomplishment / Output*
2.01	Register DG with NGO department, Ministry of Economy	Incomplete	Ineligible to register
2.02	Appoint security agency	Completed	GARDAWorld retained
2.03	Establish working relationship with partners	Completed	CHAMP sub-agreement executed; implementation plans in place

2.04	Facilitate orientation, video production, dissemination and data entry training in India	Completed	Five NHLP staff members trained on Digital Green's approach (January 2015)
2.05	Procure equipment	Completed	Five video production and 45 video dissemination sets procured
2.06	Appoint local Afghan to anchor the pilot in country	Completed	Program manager recruited and on-boarded

Following the project launch, Digital Green's Chief Financial Officer traveled to Kabul to pursue Digital Green's organizational registration with the Government of Afghanistan's Ministry of Economy. Digital Green satisfied the registration requirement of maintaining a physical office thanks to MAIL and NHLP, both of which provided Digital Green with office space on MAIL's campus in Kabul. However, Digital Green did not meet the Ministry's eligibility requirement of operating a project(s) for 24 months or more. As such, Digital Green was unable to register. The inability to register did not substantially affect Digital Green's ability to forge partnerships or execute the DIAAEA project. Digital Green and MAIL operated under a signed memorandum of understanding (MOU; see Annex 1 attached separately as a PDF), which defined and solidified their partnership, and government officials from MAIL and NHLP participated in project trainings, video production, and the project management committee (PMC) as anticipated. This said, activity implementation was slower than anticipated during the first quarter as Digital Green worked to understand the registration requirements and erred on the side of caution to ensure that it was operating in accordance with Afghan laws.

Digital Green recruited a program manager in the first quarter to lead project activities, build and manage partnerships, and support training and technical assistance to partners. The program manager was based at the MAIL Extension Director's office in Kabul. Digital Green retained GARDAWorld to provide personal protection services and secure transport for staff.

In the first quarter, Digital Green facilitated a three-day orientation training in India for a five-person delegation from NHLP, including the Director and focal point at the World Bank. The training provided an in-depth overview of Digital Green's approach and practical sessions on video production and dissemination using pico projectors. Training participants also made a site visit to observe video production and a mediated video dissemination session.

In the second quarter, Digital Green executed agreements defining roles and responsibilities and outlining implementation plans with NHLP and CHAMP, respectively.

Digital Green procured five video production sets and 45 sets of dissemination equipment over the life of the project. Video production sets included a video camera, tripod, and microphone, and dissemination sets included a pico projector and speaker. This equipment was distributed as follows, and continues to be maintained and utilized:

Entity	**Production sets**	**Dissemination sets**
NHLP	3	38
MAIL	1	2
CHAMP	1	5

ACTIVITY 3.00: Planning and ongoing support for program activities

	Activity	*Status*	*Key Accomplishment / Output*
3.01	Establish project management committee (PMC)	Completed	PMC constituted and in effect
3.02	Develop a strategy for institutionalization and scale-up of DG approach after project	Completed	Concept note describing institutionalization and scale up strategy completed

Digital Green led a participatory process to design and constitute a project management committee (PMC), which included representatives from USAID, MAIL, NHLP, Digital Green, CHAMP, World Bank, CBCMP-II, AAEP-II, Mercy Corps, and Roshan Telecom. The PMC held its first meeting on September 15, 2015 at the Minister's office at MAIL. The meeting was presided over by MAIL's Deputy Minister and attended by the Director General for Agriculture Extension and Advisor to the Minister. At the meeting, Digital Green presented an overview of the project and progress to date; screened a locally-produced video; and presented other technology-enabled applications. CHAMP and NHLP shared their key achievements and learning. Attendees expressed a strong desire to mainstream Digital Green's video-based approach to support the country's public-private extension program and to scale the approach.

Digital Green waited to convene the PMC until September to enable the project to amass greater implementation experience and data. Prior to August 2015, the project disseminated videos at a slower pace than anticipated as it awaited USAID's approval of the project's branding and marking waiver request, which permitted the project to screen videos without USAID's logo.

MAIL, NHLP, and the World Bank repeatedly expressed a strong desire to see Digital Green scale up its approach to four Afghan provinces from 2016-19 in support of the next phase of NHLP. The World Bank and NHLP conveyed a willingness to build in costs for equipment and to incorporate video production and dissemination into the responsibilities of their extension staff. Both also expressed a continued need for Digital Green's facilitation and support. Based on experience gained through the DIAAEA pilot project and partner consultations, Digital Green summarized a strategy to institutionalize and scale up its ICT-enabled approach after DIAAEA in a concept note, which it submitted to USAID in November, 2015 (see Annex 2).

Continuing to apply Digital Green's video-enabled approach would sync precisely with the Afghanistan government's extension priorities. Speaking at the 4th Annual National Agricultural Extension Conference in Kabul on February 20-22, 2016, Afghanistan's Minister of Agriculture, Irrigation and Livestock, Assadullah Zamir, named the "digitization of extension" as one of the government's four key priorities for strengthening future extension services and capacity. The conference was attended by Afghanistan's President, the USAID Mission Director and USAID technical staff, all MAIL Directors, Digital Green's Kabul-based Program Manager, and hundreds of other public and private agricultural stakeholders.

ACTIVITY 4.00: Monitoring and evaluation

	Activity	*Status*	*Key Accomplishment / Output*
4.01	Finalize M&E plan with USAID	Completed	Approved M&E plan
4.02	Conduct scoping study of M&E's quality assurance mechanism	Completed	IVR pilot conducted; recommends further testing

4.03	Develop and share contingency plan for alternate data collection and quality assurance mechanisms	Completed	Analysis indicates that mobile is a viable alternate mechanism, pending levels of mobile penetration

Once disseminations started, NHLP and CHAMP extension agents and lead farmers collected data on farmer attendance, questions and feedback expressed, and adoptions of promoted practices. The adoption reporting and verification process consisted of two steps: (1) farmers self-reported practice adoptions to trained extension workers and lead farmers; and (2) trained extension workers and lead farmers verified practice adoptions in situ and completed adoption verification forms. Trained data entry operators from NHLP, CHAMP, and Digital Green then digitized adoption verification forms into Connect Online Connect Offline (COCO), Digital Green's management information system. As such, working through trained extension workers and lead farmers, the project verified each practice adoption reported by 1,234 farmers. In addition, Digital Green and its partners conducted 48 validation visits, 43 in Kabul province and five in Nangarhar province, to cross-verify a randomly selected sample of reported adoptions as a quality assurance measure.

Digital Green worked with an India-based social enterprise, Awaaz.De, to conduct a pilot study to assess opportunities for using IVR to perform quality assurance on screening and adoptions data in COCO (see Annex 3 for a summary of study methodology and results). 25 farmers were randomly selected based on the availability of mobile numbers recorded in COCO. Farmers were given no prior notice of two incoming IVR calls, in which farmers were asked to respond using touchtone whether they had seen a particular video, and, if yes, had adopted the practice. 20 farmers (80%) picked up at least one call, and 15 (60%) picked up both. 78% of users listened to the entire call, and the average listening time was 58 seconds. Four farmers answered at least one question using touchtone.

The high pick-up rate suggests that farmers can be contacted successfully with IVR, and the high average listening time suggests that farmers were receptive to the automated voice recordings. The low response rate suggests that farmers may not be comfortable entering touchtone responses, are unfamiliar with IVR as a two-way communication, and/or may benefit from prior intimation of the call. The study concludes that IVR has strong potential to complement Digital Green's video-enabled approach and data collection processes, but additional testing (and potentially training) will be required with a larger sample size to assess opportunity to scale.

Based on the quality assurance (4.02) and data capture (5.01) studies, Digital Green concludes that there is great promise for mobile technology to be employed as alternate data collection and quality assurance mechanisms for farmers who have access to mobile phones. Mobile technologies offer a means to reduce the cost of adoption validation in areas in which transportation and security can be limiting factors.

ACTIVITY 5.00: Feasibility study for data capture

	Activity	***Status***	***Key Accomplishment / Output***
5.01	Conduct scoping study to identify technology platform for capturing programmatic data	Completed	Study proves viability of using mobile phones to verify farmer adoptions and knowledge recall

In early September, 2015, Digital Green conducted telephonic interviews to assess a random sample of 46 farmers (of a pool of 244 farmers who had adopted one or more practices at that

point) to determine their knowledge recall and practice adoption following screenings of a video featuring the practice of urea application in grape vineyards, which was first disseminated in June 2015. Increased retention in knowledge of farming practices and adoption of these practices are proximate indicators for increased agricultural productivity and incomes. All 46 adopting farmers interviewed recalled the three key practices promoted in the video and reported that they had applied these practices. None of the farmers reported knowing or using the practice prior to the current cropping season. Farmers stated that they were able to understand the messages in the video easily and that the facilitation of their screening by extension agents and/or lead farmers was useful. Farmers also expressed preference for the video-enabled approach, compared to the previous farmer field school-based extension method.

In early November, 2015, Digital Green conducted field observations to verify farmers' self-reported data. Of the 46 farmers interviewed by phone, 39 were observed directly in the field; four were not physically available but verification of their adoptions was in COCO; and three were not contactable nor was their information in COCO. The field observations, COCO verifications, and subsequent analysis indicate that the assessment data collected by phone was accurate; 42 out of 43 farmers, or 97.6%, had adopted the practice as indicated during the phone interview. The sample size required to achieve significant estimates for a universe of 244 farmers is 38 at a 95% confidence interval [93, 102.1; 5% error margin]. This suggests that manual phone interviews could be a viable means for collecting reliable data frequently, at scale, and in a cost-effective manner. (See Annex 4 for a summary of this scoping study.)

ACTIVITY 6.00: Identify local resources

	Activity	***Status***	***Key Accomplishment / Output***
6.01	Identify video producers and mediators	Completed	18 video producers and 158 mediators identified
6.02	Identify data entry operators	Completed	Four data entry operators identified

Working in partnership with MAIL, NHLP, and CHAMP, the project identified existing local functionaries in Afghanistan's public extension system as candidates to be trained on video production, dissemination, or data entry. Trainings are reported under Activity 7.00.

ACTIVITY 7.00: Capacity building

	Activity	***Status***	***Key Accomplishment / Output***
7.01	Facilitated exposure visit in India with training on video production/ dissemination, COCO operation	Completed	Seven Afghan nationals oriented on Digital Green's approach in India in December 2015
7.02	Conduct dissemination training for the mediators	Completed	158 (60 female and 98 male) mediators (extension agents and lead farmers) trained
7.03	Conduct data entry training	Completed	Four data entry operators trained
7.04	Conduct refresher trainings on dissemination	Modified	Project trained additional 61 lead farmers and extension agents in Kabul province

Digital Green organized a TOT workshop from December 9-14, 2015 in India for seven Afghan participants on key components of Digital Green's approach. Participants included three women and two men from NHLP, one man from CHAMP, and a male program manager from Digital Green. The workshop was designed to help participants transform into in-country, master trainers on Digital Green's approach to video production, dissemination,

and data collection. MAIL staff was invited to this training but was unable to attend due to delays in obtaining Indian visas.

Digital Green and its partners trained 18 individuals on video production (covering storyboarding, equipment operation, and editing), 158 individuals on video dissemination (covering pico projector usage and group facilitation), and four individuals on data entry and management (covering entering and managing group registration data, screening attendance and feedback records, and adoption data in COCO). See the table below for breakdowns on the affiliation and gender of trainees.

#	Training	Date	Days	Partner	Training Location	Participants ' Location	Participants		
							M	F	Total
1	Video production	April 18	4	MAIL, NHLP, CHAMP	Kabul	Kabul, Badam Baug, Jalalabad	10	6	16
2	Video editing	April 22	1						
3	Dissemination	April 27	2				9	2	11
4	Dissemination	May 23	2	NHLP	Jalalabad	Beshood, Surkh Rod	19	4	23
5	Dissemination	May 26	2	NHLP	Badam Baug	Qarabagh, Shakardara	13	2	15
6	Dissemination	May 30	2	MAIL, NHLP, CHAMP	Kabul	Kabul, Qarabagh, Shakardara, Farza, Kalakan, Mir Bacha Kot	12	7	19
7	Dissemination	June 08	2	NHLP	Qarabagh	Qarabagh	0	8	8
8	Dissemination	June 10	2	NHLP	Shakardara	Shakardara	0	6	6
9	Data entry	Aug 10	1	CHAMP, DG	Kabul	Kabul	2	1	3
10	Data entry	Aug 12	1	NHLP	Kabul	Kabul	0	1	1
11	Video production	Aug 12	1	NHLP, Gender	Kabul	Kabul	0	2	2
12	Subtitling	Aug 15	0.5	CHAMP, DG	Kabul	Kabul	2	0	2
13	Dissemination	Sep 01	2	NHLP	Mir Bacha Kot	Mir Bacha Kot	4	5	9
14	Dissemination	Sep 05	2	NHLP	Kalakan	Kalakan, Farza, Mir Bacha Kot	17	0	17
15	Master trainers workshop	Dec 09	6	NHLP, CHAMP, DG	New Delhi, India	Kabul	4	3	7
16	Dissemination	Jan 17, 2016	1	NHLP	Shakar Dara	Mir Bacha Kot, Guldara, Qarabaug, Shakar Dara, Kalakan	22	0	22
17	Dissemination	Jan 27, 2016	2	NHLP	Shakar Dara	Mir Bacha Kot, Guldara, Qarabaug, Shakar Dara,	0	18	18

#	Training	Date	Days	Partner	Training Location	Participants ' Location	Participants		
							M	F	Total
18	Dissemination	Jan 20, 2016	1	NHLP	Paghman	Paghman	11	0	11
19	Dissemination	Jan 10, 2016	1	NHLP	Paghman	Paghman	0	10	10
Total Number Trained							125	75	200

For its initial video production and dissemination trainings, Digital Green utilized a structured post-training exam, which included a combination of practical and conceptual components, to test trainees on their competency on aspects such as equipment handling. Overall, both male and female participants averaged scores of around 90%, which, based on Digital Green's experience in other geographies, is above average.

Based on the project's decision to expand to new districts in Guldara and Paghman districts, the project trained 61 additional lead farmers and extension agents.

ACTIVITY 8.00: Video production

	Activity	*Status*	*Key Accomplishment / Output*
8.01	Develop video production and dissemination schedule	Modified	The project scheduled the production of new videos and their dissemination on a regular basis
8.02	Storyboard, film, and edit videos	Completed	35 videos produced
8.03	Develop key messages and curricula for videos produced	Completed	Key messages developed and included in all approved videos
8.04	Conduct video quality assurance reviews	Completed	Subject Matter Specialists reviewed all videos; the TAC approved 26 videos.[1]
8.05	Curate videos on online video library	Completed	Videos produced publically available online

NHLP, MAIL, and CHAMP's video production teams produced a total of 35 videos during the project. Content focused mainly on best agricultural practices; however, a video on kitchen gardens included nutrition content; videos on pesticide use offered health and safety content; and the final video produced focused on helping mediators to standardize the way in which they conduct disseminations.

The project's Technical Advisory Committee (TAC), whose membership included implementation partners NHLP, MAIL, and CHAMP, as well as technical agencies CBCMP-II, AAEP-II, and MAIL's Gender Directorate, identified key messages in order to produce and screen videos in a time-sensitive and sequential manner. For example, a CHAMP-produced video on harvesting grapes included these key messages: (1) Dust from a cluster of grapes should not be removed to increase shelf life of the fruit; (2) Grapes cluster should be cut from pinnacle node; (3) While cutting, one hand should be placed under the cluster so that the grapes do not fall on the ground; and (4) Grapes should be harvested either early in the morning or late in the afternoon. As another example, videos produced on the application of

[1] The TAC actually approved 27 videos, one of which was rejected during USAID's review. Three videos produced in February 2016 will be reviewed by the TAC after the project's closure.

pesticides for grape cultivation were sequenced alongside videos related to the use of personal protective equipment and the safe use of pesticides.

The TAC provided a forum for increased collaboration among its members. For example, AAEP-II worked closely with MAIL to develop content for a MAIL-produced video on standard practices in quality milk production.

All videos produced were vetted and approved by NHLP and CHAMP's subject matter specialists, and then forwarded to the TAC, which scored videos for technical merit, clarity of presentation, picture and audio clarity, sequencing of content in relation to other videos, and applicability for targeted farmers. Videos with a B grade or better (Grade A = more than 70%, Grade B = more than 50%, and Grade C = less than 50%) were shared with USAID for review and final approval prior to screening. MAIL's Extension Directorate maintains physical copies of the videos and TAC scoring sheets.

Table of Videos Produced and Approved

#	Video Produced by	Video File Name	Featuring Female Farmer (Y / N)	Video Production Date	TAC Approval Date	Technical Quality (A/B/C)	USAID Approval Date
1	MAIL	Introduction to Saffron Cultivation	N	26-Apr-15	NA	NA	*Rejected*
2	NHLP	Vegetable Kitchen Gardening	Y	26-Apr-15	NA	NA	*Rejected*
3	NHLP	Orchard Layout for Stone Fruits	N	26-Apr-15	8-Jul-15	B	28-May-15
4	CHAMP	Urea Application in Grape Vineyards	N	20-May-15	8-Jul-15	A	16-Jul-15
5	MAIL	Tomato Plantation	N	2-Jun-15	8-Jul-15	B	NA
6	CHAMP	Sulfur Application in Grape Vineyards	N	15-Jun-15	8-Jul-15	A	16-Jul-15
7	CHAMP	Compost Preparation	N	28-Jun-15	2-Aug-15	A	10-Aug-15
8	CHAMP	Green Pruning in Grape Vineyards	N	29-Jun-15	2-Aug-15	A	10-Aug-15
9	NHLP	Mulching in Stone Fruits Orchard	N	7-Jul-15	*Rejected*	NA	NA
10	NHLP	Introduction and Control of Leaf Miner in Citrus Fruits	N	9-Jul-15	*Rejected*	NA	NA
11	NHLP	Making of Furrow Irrigation System	N	13-Jul-15	2-Aug-15	A	10-Aug-15
12	NHLP	Aphids Management in Vegetable Kitchen Garden	Y	14-Jul-15	30-Aug-15	B	5-Oct-15
13	MAIL	Introduction to Saffron Cultivation	N	25-Jul-15	30-Aug-15	NA	*Rejected*
14	MAIL	Standard Practices in Quality Milk Production	N	25-Jul-15	2-Aug-15	A	10-Aug-15
15	NHLP	Introduction and Control of Mites	N	4-Aug-15	30-Aug-15	B	NA
16	NHLP	Introduction and Control of Codling Moth in Apples	N	4-Aug-15	18-Aug-15	B	NA
17	NHLP	Tomato Harvesting	Y	12-Aug-15	28-Aug-15	B	18-Sep-15
18	CHAMP	Harvesting Grapes	N	17-Aug-15	18-Aug-15	A	23-Sep-15
19	NHLP	Apple Harvesting	N	19-Aug-15	19-Oct-15	A	9-Nov-15
20	CHAMP	Grapes Selection According to the Market Demand	N	20-Aug-15	30-Aug-15	A	23-Sep-15
21	CHAMP	Sorting and Grading of Grapes	N	8-Sep-15	19-Oct-15	A	23-Sep-15
22	NHLP	Jam Preparation from Watermelon Peel	Y	19-Sep-15	29-Dec-15	A	NA

23	CHAMP	Comparison between Trellising and no Trellising System	N	2-Oct-15	19-Oct-15	A	9-Nov-15
24	CHAMP	Market Linkage (Linkage Meeting Between Potential Farmers and Traders)	N	3-Oct-15	19-Oct-15	A	NA
25	NHLP	Pepper Solution for Disease Management	Y	15-Oct-15	19-Oct-15	A	NA
26	NHLP	Tomato Sun Drying	Y	9-Oct-15	29-Dec-15	A	NA
27	NHLP	Mushroom Cultivation	Y	23-Oct-15	29-Dec-15	A	NA
28	CHAMP	Cleaning of Clothes After Pest Management	Y	25-Oct-15	29-Dec-15	A	NA
29	NHLP	Bordeaux Mixture Solution for Stone Fruits and Grape Vineyards	N	28-Oct-15	NA		NA
30	NHLP	Urea Spray in Stone Fruit Orchards	N	5-Nov-15	25-Nov-15	A	NA
31	CHAMP	Use of Personal Protection Equipment During Pest Management	Y	17-Nov-15	29-Dec-15	A	NA
32	CHAMP	Safe Use of Pesticides	Y	5-Dec-15	29-Dec-15	A	NA
33	NHLP	Winter Oil Solution	N	1-Feb-16	NA		NA
34	NHLP	Bordeaux Paint Solution	N	9-Feb-16	NA		NA
35	NHLP	Preparation for Dissemination	Y	25-Feb-16	NA		NA

Rejections were issued for the following reasons:

- Circumstantial – for example, a discrepancy in how land ownership was described in a video (i.e. farmer-owned versus government-owned).
- Technical – for example, when the type of the land featured in the video was inconsistent with the correct conditions for applying the practice.
- Production issues – for example, poor visuals, background noise, or editing errors that could affect comprehension.

Digital Green curated all approved videos into Dari and Pashto collections on YouTube and Digital Green's website. These videos may be found at: www.digitalgreen.org/discover/CHAMP/Kabul/Dari/DIAAEA_Dari/ and www.digitalgreen.org/discover/CHAMP/Kabul/Pashto/DIAAEA_Pashto/.

ACTIVITY 9.0: On-board farmers

	Activity	*Status*	*Key Accomplishment / Output*
9.01	Share concept seeding procedure with implementing partners	Completed	Concept shared with NHLP and CHAMP partner staff during orientation training
9.02	Concept seed DG approach to farmer groups	Completed	Concept seeding gauged acceptance of technology

Digital Green held repeated meetings and conversations with partners at MAIL, NHLP, and CHAMP to acquaint them with Digital Green's approach. These meetings were followed by training activities noted under Activity 7.00 to build the understanding and capacity of existing extension staff to integrate the use of videos into their existing training programs. At the village level, Digital Green, CHAMP, and NHLP facilitated concept seeding sessions along with extension agents and lead farmers to introduce communities to Digital Green's video-enabled approach and provided an opportunity for individuals to share their thoughts and express consent to participate.

ACTIVITY 10.00: Building farmers capacity on new farming techniques

	Activity	*Status*	*Key Accomplishment / Output*

10.01	Conduct dissemination, capture attendance and community feedback	Completed	1,588 disseminations conducted
10.02	Enter data in Connect Online | Connect Offline (COCO)	Completed	All key project indicators updated on COCO
10.03	Disseminate video knowledge modules to farmers	Completed	5,073 farmers (2,815 male, 2,258 female) attended video screenings
10.04	Conduct dissemination quality assurance observations	Completed	10 observations performed

Extension agents and lead farmers were responsible for recording data on farmer attendance and feedback at the time of each dissemination. Mediators' paper records were then transferred to trained data entry operators, who digitized the data and uploaded it into COCO.

Cumulative dissemination data is presented in the table below:

Cumulative Dissemination Data	
Output Indicator	**Achieved**
# of disseminations	1,588
# of videos screened	26
# of male farmer viewers	2,815 (55.5% of total farmers)
# of female farmer viewers	2,258 (44.5% of total farmers)
Total # of farmer viewers	5,073
Total # of farmer groups	354
Total # of villages	269

Digital Green conducted a total of 10 field observations for dissemination quality assurance, wherein observers scored randomly selected mediators based on a set mediation quality scale, which included equipment handling skills, context setting, facilitation, subject knowledge, and quality of documentation. Of those extension agents and lead farmers observed, all received a B grade or higher.

Activity 11.00 Adoption Verifications

	Activity	***Status***	***Key Accomplishment / Output***
11.01	Ensure mediators observe farmer application of promoted practices	Completed	48 validation visits conducted
11.02	Verify farmers adopting at least one new promoted practice	Completed	1,234 farmers adopted at least one new practice

All farmer-reported adoptions were verified by a trained mediator, who used an adoption verification form to confirm a farmer's compliance with the unique non-negotiable points of a promoted practice in order to qualify as a practice adoption. In addition, the project randomly selected and physically observed 48 of the 1,234 farmer adoptions that extension agents and lead farmers verified. These validation visits were conducted as a quality assurance measure to ensure that mediators were using their forms and verifying adoptions correctly. Of these 48, only one adoption was not correctly reported. Documentation, including adoption verification forms and dissemination records, were shared with USAID's consultant, John O'Connell, during a data quality assurance visit, which took place on December 5, 2015. Because of security concerns, the project conducted fewer field

validations than anticipated. The mobile-based quality assurance scoping study (reported in Activity 4.00) tested an alternative approach for validating this data.

12.00 Reporting

Digital Green submitted quarterly progress reports (12.01), quarterly financial reports (12.02), a project closeout plan (12.03), and final program reporting (12.04) in accordance with DIAAEA's approved work plan.

Summary of Obstacles Encountered

Digital Green and its partners were confronted by several challenges and mitigated them in various ways:

- Insecurity was an ongoing concern and occasionally restricted the team's movements, particularly in and out of Kabul city, and, for instance, prompted Digital Green to compress its typical three-day dissemination training to two days.
- Although levels of commitment in applying Digital Green's approach did not waiver, partners were concerned about the uncertainty of the pilot's scale up due to a lack of secured funding. NHLP budgeted for 200 pico projectors in 2016-17, and both NHLP and MAIL stand ready to provide training venues and office space should additional resources come to bear to allow the pilot to continue and expand.
- It was difficult to organize farmer groups for disseminations during Ramadan; future planning cycles should take into account Ramadan as a less opportune time to mobilize and engage farmers.
- Digital Green was not able to register as a NGO as planned because it was operating a project lasting less than 24 months. The time spent pursuing NGO registration created an opportunity cost during the first quarter of the project, wherein Digital Green was slow to launch field level activities in an effort to ensure full compliance with applicable laws.
- The project experienced a delay from the time that videos were produced to when they were first screened, while it sought approval of a branding and marking plan waiver. The waiver, which was approved on August 9, 2015, permitted videos to be screened without the inclusion of USAID's logo. MAIL and NHLP preferred to omit the logo in order to promote stronger local ownership of content and messaging.
- They project experienced a 40-day lag on average between when mediators collected data on paper forms and when the data was digitized into COCO. Decentralizing this process to provincial levels may mitigate these delays in the future and better support public access to real-time, accurate data.
- The telephonic scoping study found that nearly all farmers confirmed what extension agents and lead farmers had reported; however, 14 of 39 farmers had trouble recalling the date when they first applied the practice. This may be mitigated by shrinking the time intervals between screenings and verifications.
- A reorganization of NHLP led to its extension staff being transferred out of DIAAEA's initial pilot districts. Digital Green had to conduct additional trainings of extension agents and lead farmers as a result.
- Extension functionaries were unable to reach the full population of farmers in their targeted geographies. Anecdotal evidence suggests that it could be a result of mobility and security challenges. To achieve the overall targets, the project had to expand to more villages than initially anticipated. This required conducting a greater than expected number of trainings as a result.

- Based on restrictive cultural norms around gender, the project decided to form an all-women video production team at MAIL. The videos that they produced exclusively featured women and were screened only by women extension agents to women-only farmer groups. Two members of this team, in particular, are highly competent in the video production process and are keen to continue to utilize video to support their extension efforts.
- The GSE tool highlighted that female participants when trained along with male participants were inhibited in their engagement. For instance, at a training in Beshood, Nangarhar, female participants were visibly disengaged and stayed among themselves on one side of the larger, male-dominated group. Subsequently, Digital Green worked with its implementing partners to conduct separate male and female trainings of lead farmers and extension agents in order to engage participants more equitably.

Assessment of Performance in Accomplishing Objectives

Together with its partners, Digital Green met all of the project's objectives, expected outcomes, and targets. Digital Green showed nimbleness in adapting its strategies to adequately engage female farmers, done primarily through the formation of an all-female video production team, and to meet its desired reach of 5,000 farmers, which was achieved by expanding to seven districts in Kabul province instead of five. On whole, Digital Green is satisfied with its performance and with the results achieved under the project. In particular, Digital Green credits its partner selection – namely MAIL, NHLP, and CHAMP – with enabling it to launch activities promptly by tapping into established, professional extension networks. Digital Green's experience in Afghanistan also helps to build the body of evidence demonstrating how video-enabled extension approaches can be introduced and integrated into existing extension systems with a light footprint. Digital Green employed only one staff person in Afghanistan and otherwise provided remote support. This dynamic helped Digital Green keep operating costs low in favor of directly supporting field level activities.

Significance of these Activities

In partnership with MAIL, NHLP, and CHAMP, Digital Green introduced a new approach to enhance the reach and effectiveness of public-private extension services in Afghanistan. The project showed how Digital Green's video-based approach, including its focus on local messaging, can accelerate the adoption of improved agriculture practices and technologies. The project's methods and outcomes proved instructive to MAIL and NHLP, and both have deepened their commitment to deploying video and other ICT-enabled approaches, as exemplified by Minister Zamir's naming the "digitization of extension" as one of the Afghanistan government's four key priorities for strengthening future extension services and capacity.

The project increased the level of collaboration among MAIL, including its gender department, CHAMP, AAEP-II, and CBCMP-II, by engaging them in the TAC and PMC and facilitating exchanges of technical information.

The project succeeded in effectively including women in video production and dissemination activities. The project worked to respect and adapt its approach around local cultural norms, as well as to tap into the initiative shown by women extension agents, which led to building the capacity of an all-women video production team at MAIL.

Description of Impact and Expected Sustainable Results

The DIAAEA project leaves a lasting impact in Afghanistan in the form of increased knowledge, understanding, and capacity on the part of MAIL, NHLP, and CHAMP staff on how to incorporate, leverage, and train others on Digital Green's video-enabled approach to enhance public extension's reach and effectiveness in Afghanistan. The project secured the attention and buy-in of high ranking officials within MAIL, who have publicly endorsed the use of video-based extension as an important tool to achieve the ministry's extension objectives. Meanwhile, NHLP has budgeted for pico projectors and video production equipment in order to expand the approach into four provinces and reach 35,000 farmers over the next three years. MAIL, NHLP, and Digital Green also collaborated on a concept which lays out a vision for further expansion and the institutionalization of Digital Green's approach over the next three years.

By virtue of training 200 supervisory and field-level functionaries, the project has built practical, technical capacity within Afghanistan's public and private extension systems to produce and disseminate locally-appropriate video content. By actively involving and empowering women extension workers and lead farmers, 44.5% of all farmers reached by the project were women, compared to the original target of 20%.

Project success stories featuring lead farmer Assadullah Qudratullah and extension worker Laila Rezapour illustrate some of the new capacity developed by the DIAAEA project (see Annexes 5 and 6). A farmer all of his life and lead farmer since 2010, Qudratullah found new skills and satisfaction by serving as the featured farmer in four videos produced under DIAAEA. Qudratullah credits the videos with generating interest in improved practices among his fellow farmers and sees videos as a refreshing change from the written methods used in farmer field schools. Meanwhile Rezapour, an extension worker with NHLP in Herat province, earned her invitation to project trainings through her own initiative and strong desire to use video as a tool to reach female farmers. Following the training, Laila produced and promoted videos in Herat and hopes to launch a new video production team for the region.

The 26 approved videos produced under the DIAAEA project remain available for use as extension tools by MAIL, NHLP, and CHAMP personnel following the life of the project and are available to the public online. These videos were screened 1,588 times by 158 extension agents and lead farmers to 5,073 farmers. This led to a total of 1,234 individual farmers adopting improved practices promoted through the videos. Farmers developed greater knowledge and the likelihood of application of improved agricultural production practices increased, and these gains are expected to extend beyond the life of the project. Of the female participants surveyed using the Generalized Self Efficacy (GSE) tool, 59 out of 115, or 51%, reported increased self-efficacy over the life of the project. TAC members demonstrated increased capacity to assess and improve videos' content quality, technical quality, and aesthetics, which can be leveraged to support future video production activities.

Finally, scoping studies on the use of mobile technology in supporting data collection and quality assurance functions demonstrated its viability and cost-effectiveness, and can serve as a reference point for future testing and system development.

Cumulative Data for Numerical Targets, with comparisons to baseline

Cumulative data for targets is summarized below according to the approved DIAAEA project logical framework. As Digital Green introduced an entirely new approach in Afghanistan, the baseline for all indicators was zero.

Goal / Objective / Expected Output	Indicators	Planned/Target	Achieved
GOAL (USAID/Afghanistan Sub-Intermediate Results)			
Public and Private Agriculture Service Delivery (Sub-IR 1.2.3) and Productivity of Key Agricultural Crops Increased (Sub-IR 1.2.1)			
PURPOSE (AGRED Objective)			
Agricultural productivity and income through sustained application of science and technology increased; and the capacity of MAILs and DAILs to sustainably provide effective applied research and extension services enhanced	Number of farmers and others who have applied new technologies or management practices as a result of USG assistance	1,500 (1,400 male, 100 female)	1,234 (744 male, 490 female)
	Percentage of females who report increased self-efficacy at the conclusion of USG supported training/programming (GNDR-3)	10% (20/100)	51% (59/115)
SUB-PURPOSE 1 *(DIAAEA Obj. 1)*			
1. Interpersonal and ICT skills of target beneficiaries strengthened (to effectively engage and mobilize farmers)	Number of extension agents that demonstrate competency in all skills enhanced by DIAAEA trainings	146 (94 male, 52 female)	158 (98 male, 60 female)
SUB-PURPOSE 2 *(DIAAEA Obj. 2)*			
2. Technological, platform and service delivery components refined to the Afghanistan context	Digital Green approach contextualized in Afghanistan by end-November 2015		All components refined and operational
OUTPUTS			
1.1. Skills of extension agents and lead farmers improved	1.1.1.1. 12 extension agents and lead farmers trained on video production skills	12	18 (10 male, 8 female)
	1.1.1.2. 45 extension agents and lead farmers trained on video dissemination skills	45	158 (98 male, 60 female)
	1.1.1.3. 4 extension agents trained on data management	4	4 (2 male, 2 female)
1.2. Knowledge of smallholder farmers on agronomic practices increased	1.2.1. 5,000 smallholder farmers reached	5,000 (4,000 male 1,000 female)	5,073 (2,815 male, 2,258 female)
	1.2.2. Percentage of female participants in USG-assisted programs designed to increase access to productive economic resources. (GNDR-2)	20%	44.5%
2.1. Videos on agronomic practices promoted	2.1.1. 1,000 video dissemination events by end-November 2015 (extended to end-February 2016)	1,000	1,588 by end-February 2016
	2.1.2. 12 videos produced by end-November 2015	12	35 produced. Of these, 26 approved and disseminated

Though not a part of the logical framework, the project also monitored and reported against the following women-/gender-related indicator:

Indicator	Target	Achieved
Number of private enterprises, producer organizations, water user associations, women's groups, trade and business associations, and CBOs that applied new technologies or management practices as a result of USG assistance	65	96

List of project documents and other reference materials related to the project, including sources of information

All videos produced under DIAAEA may be found at: www.digitalgreen.org/discover/CHAMP/Kabul/Dari/DIAAEA_Dari/ and www.digitalgreen.org/discover/CHAMP/Kabul/Pashto/DIAAEA_Pashto/. Data regarding disseminations and farmer adoptions may be found at: http://www.digitalgreen.org/tools/. All project reports will be uploaded on to Afghan Info.

Findings

As a pilot project, Digital Green was committed to capturing learning internally to feed into project management and to support the design of future interventions in Afghanistan. Key points of learning emanating from DIAAEA include:

- Based on progress against targets, Digital Green believes that its video-enabled approach is an appropriate and useful tool to enhance public-private extension services in Afghanistan.
- Manual phone interviews were found to be an effective tool for conducting adoption verifications, wherein, using a sample size of 43 randomly selected farmers out of 244 eligible farmers, physical observations confirmed farmers' self-reported responses and the adoption data that extension agents and lead farmers reported in COCO 97.6% of the time.
- IVRS, while promising for its ability to reduce possible bias and subjectivity, will require more testing and likely greater sensitization among farmers to prompt their engagement with the system.
- The percentage of women who engaged in video production and dissemination activities was higher than anticipated. Digital Green believes that engaging female extension workers and motivating them to engage more women were keys to this achievement. This emphasis on female extension workers has proven to be useful to programs like the AAEP-WIA.

Comments and recommendations

In order to capitalize on the pilot project's outcomes and stakeholder momentum, Digital Green continues to search for funding to scale up the video-enabled extension approach introduced by DIAAEA in an effort to engage 35,000 more farmers in four provinces over the next three years in partnership with MAIL and NHLP. NHLP is particularly keen to leverage Digital Green's approach to extend their horticulture extension program. They have expressed a need for technical assistance and monitoring support to plan and execute video's inclusion. Digital Green and NHLP are both concerned that a gap between the pilot project's completion and the launch of new activities may result in the loss of momentum among trained partners, extension agents, lead farmers, communities engaged under the pilot.

In light of low levels of literacy and high levels of insecurity in Afghanistan, Digital Green and the Director General of Agriculture believe that technological solutions, such as IVRS, warrant further investigation, testing, and application in Afghanistan.

Annex 1: MOU with MAIL; attached separately as PDF

Annex 2: Scale-Up Concept Note and Strategy

digitalGREEN

Digital Integration for Agriculture, Markets and Nutrition in Afghanistan

Concept Note

November 30, 2015

Summary:

Digital Green (DG) proposes to improve livelihoods and nutrition for 35,000 farmers by promoting the adoption of good agriculture practices and health-seeking behaviors through the use of innovative digital and mobile technology in four provinces in Afghanistan. In three years, DG will reach this goal by (1) promoting the adoption of new agriculture practices in five provinces through its existing extension work with NHLP and MAIL; (2) supporting efforts to improve access to regional and international markets for high-value horticulture; and (3) promoting the adoption of improved nutrition practices, particularly among women, through technology-enabled, human mediated training. This project is proposed to build onto an initial one-year pilot project (**AID-306-G-15-00002)** which will be completed in February 2016 and is on track to engage at least 5,000 farmers with digitally taught agriculture and animal husbandry innovations.

I. Background:

Digital Green has developed a training approach that amplifies the reach and increases the effectiveness of existing public and private agricultural extension programs by helping communities to create videos by farmers and for farmers in their local context and language. These videos are then disseminated through screenings among existing farmers' groups. They are facilitated by extension agents or peer mediators, who also collect data and feedback from farmers as they participate in this knowledge exchange.

This approach has achieved success because target beneficiaries can relate to the farmers in the videos, and the trained facilitators are able to build upon the videos' messaging to spur discussion among farmers to adopt featured practices. Videos produced through the DG approach are highly localized, as they are customized for the crop, climate, and language conditions of the area in which they are produced and disseminated. They are specifically targeted towards developing farmer capacity across value chains to promote farmer market linkages, with a focus on the priority value chains identified by host government agencies, private sector partners, USAID and other collaborators.

In the past year of DG's pilot project in Afghanistan, it has partnered strategically with the Ministry of Agriculture, Irrigation, and Livestock (MAIL) and its local implementing partners, namely the World Bank-financed $115m National Horticulture and Livestock Project (NHLP) and the USAID-supported Commercial Horticulture and Agricultural Marketing Program (CHAMP). A formal memorandum of understanding with MAIL, signed by the Minister of Agriculture, Irrigation, and Livestock, frames the roles and responsibilities as well as results of the Government of Islamic Republic of Afghanistan's collaboration with Digital Green. The pilot project is being implemented in Shakar Dara, Mir Bacha Kot, Farza, Kalakan, and Qarabagh districts in Kabul province as well as Beshood and Surkh-Rōd districts of Nangarhar province in Afghanistan.

II. Impact to Date: The pilot project has achieved its capacity building objectives and is on target to reach 5,000 farmers, including 1,000 women, by the end of February 2016. Milestones and highlights include:

1) Provided training and quality assurance for frontline extension workers and local partner staff on video production, dissemination and data collection

- 16 MAIL, NHLP and CHAMP coordinating staff members (6 women) on producing local videos
- 108 staff members, extension workers and lead farmers on facilitating screenings.
- Constituted a technical advisory committee (TAC) to review these videos with domain and gender experts.
- Trained three data entry operators on DG's Connect Online | Connect Offline data management system.
- 19 videos produced by MAIL, NHLP and CHAMP on subjects, like harvesting of grapes, and sorting and grading of grapes, were approved and released for distribution as a result.

2) Provided technical advisory services and project management support: A Project Management Committee (PMC) was constituted under the chairmanship of Ministry of Agriculture, Irrigation and Livestock's (MAIL's) Deputy Minister and Director General for Agriculture Extension and including key stakeholders from United States Agency for International Development (USAID), World Bank, DG, National Horticulture and Livestock Project (NHLP), Capacity Building and Change Management Program-II (CBMCP-II), Commercial Horticulture and Agriculture Marketing Program (CHAMP), Afghanistan Agriculture Extension Project-II (AAEP-II), Mercy Corps, and Roshan Telecom.

3) Mobilized farmers, thereby accelerating the sustained adoption of new practices and tools: Extension agents and lead farmers facilitated the screening of these videos among farmer groups using battery-operated mobile projectors more than 786 times to over 2,450 farmers (across 260 farmer groups) in 203 villages of Kabul province resulting in 651 adoptions of new practices. Of these 2,450 farmers, 572 (23.3%) were women farmers.

III. Technical Approach for Next Phase: A timely transition from the pilot project into a scaled-up expansion for the next 3 years can extend the success from engaging 5,000 to 35,000 (20% women) farmers and capitalize on the groundwork already laid. DG has employed a country representative during the pilot phase who is based in Kabul and has anchored project activities. His experience as well as those of the partners brought together in the project to date would assure continuity into a second phase and would support MAIL's new extension policy framework.

Over the next three years, Digital Green proposes to build on its success in the pilot by scaling up its approach to four provinces and: 1) deepen its ongoing collaboration with MAIL's extension and gender departments, NHLP, CHAMP, RADPs, Roshan and USAID; 2) forge new connections between extension agents and lead farmers to demand-driven market initiatives; 3) support the adoption of behaviors that improve nutrition among women.

Objective 1: Leverage existing extension work with NHLP, MAIL, and USAID to extend training and adoption of new agriculture practices to four provinces.

Extension units are valuable assets; they serve as useful venues for training and video production. Leveraging existing systems also assures sustainability and coordination as existing programs are supported but not duplicated.

1) Integrate and institutionalize DG approach with MAIL and NHLP. NHLP has already begun planning to integrate the DG approach in an expanded project reaching 181 districts in at least 22 provinces of Afghanistan. NHLP has solicited DG's support in technology development and technical assistance for institutionalizing it as part of a public-private

extension system. The scalability and context specific application of DG's approach is rooted in its capacity building of local stakeholders, both in the production (with quality control) as well as dissemination and monitoring of impact. The potential for local ownership in public and private sectors are already realized in the pilot project. Champions and lead trainers among DG's implementing partners have also been nurtured through exchange visits between India and Afghanistan at national and provincial levels. DG will continue to work in both sectors with the same partners in phase 2 as well as expand to include HEMAYAT, RADPs, and Roshan Telecom.

2) Expand adoption of good agriculture practices by exploiting multiple media channels using video, mobile and voice technology. The second phase will capitalize on connections made in the pilot phase, particularly through the involvement of other strategic stakeholders in the Project Management Committee. Roshan Telecom, for instance, has an existing interactive voice response system (IVRS) in which farmers register to receive prerecorded audio messages related to the crops that they're interested in growing during the cropping season. Currently, this content is relatively generic and limited in scope and depth. The videos that have already been produced could serve as base material that could be reinforced via an IVRS or SMS agricultural advisory and market information service for Roshan's 6 million active subscriber base. DG will explore similar collaborations for exchanging content through radio with Niro Educational, Economic and Research Organization (NEERO) and potentially through television as well with the Moby group.

3) Develop and train five all-women video production groups, which will target women farmers and coordinate with health and nutrition activities outlined in Objective 3 below. One of the important lessons learned in the pilot study was the cultural necessity to separate men and women in pedagogical situations to allow for full participation and exchange of ideas by women.

4) Continue to support the development of MAIL's new extension policy. MAIL's extension policy on capacity building and training includes a clear mandate for training DG can support: "Capacity building for farmers, farmers' associations and cooperatives should follow different approaches including: (i) technology transfer with higher institutions and research organizations establishing demonstration plots and exposing farmers during field days to new technologies, and (ii) participatory learning and action." MAIL's Director General for Agriculture Extension is keen to explore opportunities to leverage Digital Green's support to build a knowledge management platform across the various development partners, like AAEP-II and CBMCP-II, which it works with. MAIL is interested, for instance, in seeing how the library of videos, which Digital Green has already transferred to MAIL, could serve as a curriculum to build the capacity its own extension staff.

Objective 2, Access to Markets:

Extending DGs approach to develop capacity in value chain addition at the level of the local farmer as well as develop links to agribusiness is a potential that can be exploited through established connections with the PMC, and partners such as CHAMP who already have connections in the commercial agricultural sector. At present, private sector engagement is low, but is crucial to a successful and sustainable program. The expansion of the DG method to leverage private sector linkages brings tremendous added value to the project as a whole, particularly for local farmers. Market access linkages include:

1) Leveraging the existing partnership with CHAMP in (Kandahar, Kabul, Parwan, Kapisa, Logar and Wardak) to adapt current training content to meet commercial quality and volume

standards for high-value horticulture, leverage DG's data management system for food traceability, and establish linkages between agribusinesses targeted by RADPs, CHAMP and other market development programs. DG, for instance, has learned through a scoping study a mobile-based IVRS can be used to collect data on data on farmer participation and adoption of practices in a reliable manner. This approach can be expanded for more efficient supply chain management in locations that may have varying levels of accessibility due to security considerations.

2) Augment CHAMP's existing training programs with women and men farmers by expanding the use of video instruction (on trellising for grapes, and women-owned poultry businesses). This builds on capability, developed in the pilot phase, of MAIL, NHLP, and CHAMP staff at national, provincial, and district levels to produce and share videos. DG would still need to provide technology development and technical assistance support but individuals that have already been trained (champions) can help take it forward.

3) Enable NHLP extension agents and lead farmers who are becoming for-fee service providers for various veterinary and crop management to also become commodity aggregators to feed into market development programs. DG will experiment with a mobile application that it has developed in India to optimize the aggregation, transport logistics, and payments for farmer produce that can be sold at local markets. Transactional activity with markets will feed back into the production of extension messaging on practices, such as improved post-harvest management or improved crop production planning. These practices will support farmers as well as build the capacity of extension agents and lead farmers to be market-oriented and entrepreneurial.

Objective 3, Support the adoption of good health and nutrition practices among women

Cultural and security considerations vary across regions and may determine how individuals, especially women, can be involved, Based on this reality, the project decided to form an all-women video production team at MAIL. The videos that they produce exclusively feature women. The videos are screened only by women extension agents to women-only farmer groups. The need to maintain this strict protocol to engage women was not initially anticipated, but has been successful. The separation of genders has also opened opportunity for more gender specific content such as maternal and child health as well as WASH and nutrition training. DG has worked with SPRING, a USAID-supported health and nutrition consortium, and PATH to improve mother and child health outcomes in other geographies, including India and Ethiopia, with integrated nutrition and agriculture messaging and would leverage learnings from this work to incorporate this messaging into the extension phase. MAIL has already expressed a desire to create women-focused content and has proposed the following adaptations:

1) Videos will be produced by women video production teams and distributed among women groups by women extension agents and lead farmers

2) Collaboration with ongoing USAID health projects such as HEMAYAT to develop and improve appropriate health and nutrition content and select target districts

3) Coordination with AAEP-II's Women in Agriculture program to leverage the training programs that they have already developed specifically for women farmers and established networks of extension agents and lead farmers

IV Sustainability: The question of sustainability must address both implementing partner as well as farmer engagement: 1) There is commitment from the Ministry of Agriculture, through MAIL, as well as CHAMP, and NHLP and other stakeholders to the ongoing support and expansion of the

digital video approach to agricultural extension and other behavior change innovations in Afghanistan. 2) Innovations on which farmers received training are being adopted and practiced once training is received. Based on pilot project outcomes, DG is confident it will be able to build on its successful past performance:

1) Sustainability within Public Extension System: The commitment to the future of the project from implementing partners and strategic stakeholders is evidenced in the formation and feedback from the PMC. Based on the success that the pilot has been able to achieve in a short duration, MAIL, including the Deputy Minister and Director General for Agriculture Extension, NHLP and the World Bank have expressed keen interest in expanding and institutionalizing the DG approach as a crosscutting approach to support the country's public-private extension system. NHLP has committed to procuring at least 200 mobile projectors and 50 video production kits for the expansion in addition to incorporating activities, like video production, dissemination, and data collection, into the roles of its provincial-level coordinators as well as its district-level extension agents and lead farmers across the country.

The project is working with USAID, MAIL, the World Bank, and NHLP to see how the transition from the current pilot to an expanded program can be as smooth as possible to mitigate potential risks associated with having a break in activities. The fact that the project does not rely on video production and services outside the country, but rather enables existing extension officers and lead farmers to drive the video production, dissemination, and data collection activities as a part of their existing roles, assures that capacities to continue implementation rest in the hands of local implementers.

2) Sustainability for Local Farmers: A rapid assessment was conducted across a random sample of 46 participating farmers in Kabul province to assess farmer perception on their comprehension and valuation of DG's video-based extension approach. 100% of farmers were able to recall the key practices promoted in the video on Urea Application in Grape Vineyards chosen for the assessment and all farmers also reported applying it in their vineyards. Farmers preferred the video-enabled approach to the previous farmer field school method of extension that most had experienced, as they were able to comprehend and retain the audio-visual messages better.

A personification of this success can be seen in Assadullah Qudrathulla, a lead farmer who appears in four videos produced by CHAMP on viticulture. Last year, Assadullah harvested grapes worth AFS 38,000. This year, he applied new farming techniques in his grape vineyard which resulted in a harvest worth AFS 165,000 from the same vineyard. He noted, "the farmer field school technique is dated and involves a lot of paperwork and reading. Many farmers in Afghanistan are illiterate and hence, reading becomes a roadblock. Videos are easy to understand and recall. With the old extension approach, we would either get dated information or we would not apply the techniques properly which resulted in less than optimal results…"

V. Conclusion:

As can be seen from in both M&E results as well as confidence expressed through commitments from the World Bank, MAIL, and NHLP, and the newly formed PMC, the pilot has succeeded beyond expectations in realizing its objectives and would have an even greater impact on an expanded scale going forward. It is important to acknowledge as well the South-South cooperation this initiative has fostered and seeks to maintain. Exchange visits between implementing partners and counterparts in India have taken place in the pilot phase and would continue to be part of the project expansion in the scaled-up phase. This kind of exchange is one of the best guarantors of appropriate relevant innovation. It also builds practical bridges of collaboration, and encourages understanding and good will.

Annex 3: IVR Feasibility Scoping Study Report

Interactive Voice Response (IVR) systems help overcome barriers of literacy, distance, and smartphone penetration through voice-based communication on any type of phone available in rural settings. Digital Green has conducted IVR pilots in India and Ethiopia to facilitate communication with extension workers, perform quality assurance checks, and reinforce video messaging. In Ethiopia, a Digital Green-led ICT-consortium is working with the Ethiopian Agricultural Transformation Agency (ATA) on their national IVR line to localize content and integrate a Q&A forum with the consortium IVR partner, Awaaz.De. Security considerations in Afghanistan make the normal flow of information difficult, giving an added impetus to use IVR. The aim of the scoping study was to test the feasibility of IVR implementation in the Afghanistan context. The scope was limited to landscaping of existing IVR solutions, engaging with telecom operators on potential partnerships, and conducting rapid tests to determine feasibility.

The telecom sector in Afghanistan has seen phenomenal growth since 2002. As of 2012, spurred by the expansion of mobile services, with over 64% tele-density (64/100) and 85% population coverage, there are more than 17.41 million telephone subscribers (mobile, code-division multiple access [CDMA], and fixed-line) [The State of Communications and Internet in Afghanistan (2006-2012)]. Afghanistan also has a low literacy rate at 38.2% of the population. The combination of high mobile penetration and low literacy rates make IVR a strong candidate to overcome challenges in data collection and information accessibility for farmers.

Digital Green engaged with Roshan, the leading telecom provider in the country to discuss a potential partnership. Roshan already has (1) an Islamic IVR line; (2) an entertainment IVR line to download ring tones, picture messages, lifestyle tips, and interactive games; and (3) a 'Malomat' line, which is a national agriculture price information system providing farmers and traders with access to commodity information in 13 provincial wholesale markets. Digital Green sees a potential to share content featuring locally-relevant agricultural practices between the videos its extension partners have produced and a national agriculture IVR service. Digital Green held discussions with an IVR platform service provider, Voto Mobile (https://www.votomobile.org/), with experience in running IVR projects in Afghanistan. Voto Mobile has two operational IVR projects: (1) Impassion Afghanistan, which sources stories from local female journalists for major news outlets; and (2) surveying field vaccinators during monthly polio eradication campaigns using their platform in partnership with UNICEF. There are other instances of IVR use in Afghanistan, such as a response option on Vodafone Global's M-PAiSA service.

Before testing an automated voice response system, Digital Green conducted a rapid assessment of farmer perception and adoption to assess the effectiveness of using mobiles for data quality assurance in the DIAAEA project's third and fourth quarters. Physical observations in the field verified that farmers' self-reported responses during phone interviews matched 97.6% of the time with ground reality, signalling the viability of using mobile phones for data capture and management and to support quality assurance.

Digital Green took the results of these manual phone interviews further by experimenting with an IVR-based automated system for conducting the same data quality assurance survey. Farmers were given no prior training nor advance notification of incoming IVR calls. 25 farmers, whose mobile numbers were available, were selected. COCO data showed that the farmers had attended screenings and adopted practices for (1) trellising and (2) jam preparation from watermelon peel.

A call flow and script were created in English for each video, and then translated and recorded in the local dialect by Digital Green's ground personnel. The survey was loaded on Awaaz.De's (https://awaaz.de/) IVR platform and conducted remotely using an international number. Two calls were made to each farmer, one for each video. The farmers were asked to respond using touchtone whether they had seen the video, and if yes, whether they had adopted the practice. The results were as follows:

- Out of 25 farmers, 20 farmers (80%) picked up at least one call; 15 (60%) picked up both.
- 78% of users listened to the entire call, and the average listening time was 58 seconds.
- Four farmers answered at least one question that was asked to them.
- The overall cost of the pilot was low due to the small sample size, but the per minute call rate was expensive due to international calling.

The IVR study results suggest the following:

- High pick up rates are a strong indicator that farmers can be contacted successfully with IVR, and validate the extent of mobile connectivity in the study area. However, the sample size of the survey was small, so this might not be true for all regions.
- High average listening time suggests that farmers were receptive to the automated voice recording and were able to follow the message. This indicates that an IVR system has the potential to scale with the target audience.
- Low response rates could be attributed to farmers not being comfortable in entering touchtone responses, unfamiliarity with IVR as a two-way communication, and/or no prior intimation of the call. It would be useful to assess whether repeated exposure to the system or training on using IVR system could potentially increase farmers' participation.

The scoping study finds IVR to have strong potential to complement Digital Green's human-mediated video screenings and data collection processes to overcome challenges of low literacy and insecurity in the Afghanistan context. High mobile penetration and existing IVR projects clearly suggest that IVR can be a practical medium of communication in Afghanistan. The survey was limited in scope to rapid landscaping and testing, but the indicators are positive enough to support further testing of IVR solutions. Specifically, the assessment team recommends:

- Further exploring partnership with the national mobile operator Roshan;
- Engaging with an IVR platform service provider with a local E1 line to reduce costs; and
- Conducting more exhaustive pilots (which may also include training) to determine potential use cases and inform learning to design IVR solutions that can be taken to scale.

Annex 4: Feasibility Study for Data Capture

Rapid Assessment of Farmer Perception and Adoption
Digital Integration to Amplify Agricultural Extension Afghanistan

A rapid assessment was undertaken in Kabul province to assess the progress of the DIAAEA project in terms of farmer perception on the ease of understanding and utility of Digital Green's video-based extension approach, as well as how many farmers applied the practices featured in the videos screened. A large-scale effectiveness or impact evaluation was not attempted because of the short duration of the project as well as security concerns associated with a large-scale data collection exercise. As described in the project technical application, increased retention in knowledge of farming practices and adoption of these practices are proximate indicators for increased agricultural productivity and incomes.

Method
The assessment randomly selected 46 farmers in 40 villages from five districts (Shakar Dara (6), Qarabaug (10), Mirbacha Kot (12), Farza (10), and Kalakan (8)). The assessment considered only one practice, urea application in grape vineyards, which was featured in one particular video that was produced and screened.

The following parameters were surveyed:

1. Recall of non-negotiable points
    a. When is urea applied and in what quantity?
    b. How is urea applied?
    c. What is done immediately after applying urea?
2. Self-reported adoption of the practice
3. Whether farmers reported adopting the practice for the first time
4. Ease of comprehension of the video
5. Perception of mediation quality
6. Comparative sense of video-enabled approach with previous extension methods (Training & Visit)

To conduct the rapid assessment, Digital Green first designed the assessment instrument. Then, in September 2015, Digital Green's Program Manager in Afghanistan contacted the representative sample of farmers by phone over a one-day period and asked them open-ended questions to complete the tool. The project opted to have the Digital Green staff member serve as the interviewer, as opposed to an Afghan partner, in order to minimize any potential bias.

The video promotes an innovative practice of applying urea to vineyards to promote leaching of urea and to increase nutrient availability. Previously, farmers typically mixed urea in water and poured it on the ground, but this practice involves applying urea through a small hole drilled at the base of the plant and covering it with soil. Key components of the

improved practice are: (i) applying 95 to 100 grams of fertilizer to each plant three times (i.e. during budding, fruiting / clustering, and harvesting); (ii) digging a hole next to the vines; (iii) immediately covering the hole with soil following urea application; and (iv) immediately watering the hole after covering. Key message-i indicates when urea is to be applied; message-ii indicates how to apply urea; and message-iii indicates the immediate action after applying urea to the vines. Key messages-ii and iii were combined under one question.

Results

All of the sample farmers could recall the three key practices (when, how, and what next) promoted in the video. All farmers also reported that they had applied each of these practices in their vineyards. None of the farmers reported knowing or practicing this before. Farmers stated that they were able to understand the messages in the videos easily and that the quality of the extension agents who facilitated their screening was good. They noted that extension agents responded to questions with sound technical knowledge. Farmers expressed preference for the video-enabled approach compared to the conventional one as they were able to comprehend and retain visual, step-by-step messages better.

Adoptions self-reported through phone interviews were verified through in-person observations by a Digital Green team member with the same set of farmers in October and November, 2015. Of the 46 farmers interviewed by phone, only 39 farmers could be contacted. Of these seven farmers that were not reached, the adoptions of four farmers were already recorded in COCO, as these verifications were recorded by lead farmers. Thus, Digital Green sought to re-verify the adoptions of 43 farmers (39 in person and four via COCO alone) from 39 villages with the same set of key messages.

Of these 43 farmers, 22 mentioned that they adopted Urea Application in Grapes Vineyards for the first time; whereas, during the telephonic verification, 100% of farmers said that they adopted this practice for the first time. This discrepancy is likely due to the fact that urea application was already being practiced by some farmers without them necessarily knowing its name, and/or some farmers differentiated the practice because the video practice included a new technique. Of the 43 re-verified adoptions, only one farmer was found to have not adopted the practice as indicated during the phone interview. This farmer appeared to understand the practice and its non-negotiable points clearly, but had not actually put it into practice at the time of verification. 14 farmers mentioned adoption dates that pre-dated the screening date. These results are summarized in the table below:

Parameters	Participant's Response
Recall of non-negotiable points	100% were able to recall key practices
Physical adoption of the practice	100% reported applying the key practices; 97.6% of these were verified through field observations
First time application of this practice	100% reported that they had never applied the practice before during telephonic interviews; 48.8%

	mentioned that urea application was not new but the current technique was different
Ease in understanding of messages in the videos	100% found the messages easy to understand
Quality of mediation	100% rated extension workers' facilitation as good
Comparative perception with earlier extension approach	100% reflected that they were able to understand messages better in the video-enabled approach compared to trainings and visits

Based on the accuracy of the data collected by phone and corroborated by field validation, the assessment demonstrates the feasibility of using telephonic methods to collect information in resource-constrained and security-compromised contexts. This may be especially true in Afghanistan, where a shortage of agricultural extension workers is further constrained by security considerations. With these encouraging results in hand, Digital Green will explore the possibility of automating telephonic data collection processes through the use of Interactive Voice Response (IVR) in the project's final quarter.

Conclusions

1. In-person, verified adoptions matched self-reported, telephonic adoptions for 42 of 43 farmers, or 97.6% of the time. Based on this accuracy, alternate mobile-based methods of data collection appear feasible.
2. One farmer indicated a physical adoption that proved inaccurate during the in-person field observation, and several farmers were unsure if they were adopting the practice for the first time or not. This indicates the importance of repeating instructions (including definitions if necessary) and seeking confirmation during telephonic data collection.
3. 14 of 43 farmers indicated an adoption date that was before the screening. Ideally, adoptions need to be self-reported within one week of the practice application to improve recall accuracy.
4. Further automation through IVRS can increase the speed and scale of data collection post-testing of these methods.

Annex 5: Project Success Story – Assadullah Qudratullah

ASSADULLAH QUDRATULLAH – LEADING BY EXAMPLE

Sixty seven year old Assadullah Qudratullah has been farming since childhood. He was born into a family of farmers in Khwaja Wadood village in Shakardara district of Kabul province. Assadullah cultivates grapes and apples on his two *jerib* (0.4 ha) farm, the proud owner of 250 vines and 120 apple trees. Assadullah has been associated as a lead farmer with the Commercial Horticulture and Agricultural Marketing Program (CHAMP) since 2010. His association with CHAMP has increased his knowledge about farming significantly more than what he learnt from his parents and grandparents. His keen desire to learn is the reason that he is today a lead farmer, providing technical support on cultivating grapes to a group of about 15 farmers. Assadullah was also chosen to feature in short instructional videos produced as part of the USAID-funded Digital Integration to Amplify Agriculture Extension in Afghanistan project with the aim of increasing uptake of best practices by other members of his community.

Assadullah appears in four videos produced by CHAMP on green pruning in grape vineyards, applying urea in grape vineyards, applying sulfur in grape vineyards, and preparing compost. His lively presence and the vigour with which he promotes best practices have succeeded in motivating his peers to follow his example and adopt the practices he promotes through the videos.
Regarding his cheerful countenance and undying vigour, at the age of 67, Assadullah says "I am a person with an open mind and am open to change. I like to apply research-backed techniques proven to improve the quality of life. I have learnt new techniques from CHAMP and would like to promote these as I currently do as a lead farmer." Last year, Assadullah harvested grapes worth AFS 38,000. This year, he applied new farming techniques in his grape vineyard which resulted in a harvest worth AFS 165,000 from the same vineyard.

VIDEOS ASSADULLAH FEATURES IN

Compost Preparation:
https://www.youtube.com/watch?v=JHSFxv4UCJ4&feature=youtu.be

Sulfur Application in Grape Vineyards:
https://www.youtube.com/watch?v=z71cQjb0CU4&feature=youtu.be

Urea Application In Grape Vineyards:
https://www.youtube.com/watch?v=S7UThLbAYBo&feature=youtu.be

"Featuring in the videos motivates me as I am able to reach out to more of my fellow farmers. I guess, the satisfaction I get from being able to reach out to fellow farmers with essential information on improved farming practices that can benefit them reflects on my face. Through these videos, I have also become familiar with the donors who support this project, which is a good feeling. Although I am a lead farmer, featuring in the videos makes me feel like I am an actual extension worker." He adds, "the farmer field school technique is dated and involves a lot

of paperwork and reading. Many farmers in Afghanistan are illiterate and hence, reading becomes a roadblock. Videos are easy to understand and recall. With the old extension approach, we would either get dated information or we would not apply the techniques properly which resulted in less than optimal results. Now, fellow farmers watch me demonstrating improved techniques in the videos and drop by to learn more. I am proud to share that I have convinced at least nine farmers in my village to adopt best practices. This in turn motivates me to continue my work of learning and sharing."

Annex 5: Project Success Story – Laila Rezapour

Laila Rezapour, Annual Crop Officer, Herat province

Digital Green's approach inspires a young advocate in Herat

Laila Rezapour was born in Iran, the second of five children. She enjoyed school and was keen to study further, so when the socio-political environment prevented her from attending, her parents decided to move to Afghanistan when she was 12. In Afghanistan, Laila continued her studies and ultimately completed a Bachelor's in Agriculture. After graduation, she did a six-month internship with a local NGO and then joined the Afghan government's National Horticulture and Livestock Project (NHLP) as the Regional Annual Crop Officer in Herat. Fast forward two years and Laila is still with NHLP in Herat, teaching women how to cultivate kitchen gardens and cook in ways that maintain the nutritional value of the vegetables they grow. She also engages women on issues of health and sanitation.

Recently, Laila and some of her counterparts at NHLP were invited to take part in a week-long training program in India under the USAID-supported Digital Integration to Amplify Agricultural Extension in Afghanistan (DIAAEA) project. A partnership between Digital Green, NHLP, and other national and international partners, DIAAEA aims to test and refine Digital Green's approach to agricultural extension, that it developed and successfully implements in India and Ethiopia, within Afghanistan.

DIAAEA works in the Kabul and Nangarhar provinces, but Laila was nominated to attend from Herat based on her strong personal interest in using video-based learning with the women with whom she works. During her studies, Laila successfully turned to YouTube to figure out complex projects; thus, she knew of video's ability to communicate and translate complex messages. Most of Laila's work is conducted via workshops, so capturing and holding an audience's attention is key. With video, she finds that everyone can understand and more quickly. Laila recounted, "I joined the training, really enjoyed what I learned, and then went back to Herat and immediately made two videos about compost making and watermelon jam making." Laila said that, "although Herat was not a part of the plan for Digital Green and NHLP to roll out the video-based approach, I wanted to bring this model to Herat. There are many women here that need just a small starting point to improve how they farm. My colleagues first thought that video was going to be a hobby for me and no one took much interest, but when I finished shooting and editing, they started to see and believe its worth."

Laila, left, examines crops with a woman farmer in Herat province

Laila readily acknowledges that she needs additional hands and minds to make the approach successful in Herat. "The first video I made had an error in it, so the DIAAEA Technical Advisory Committee rejected it. I'm hopeful that we will be able to form a team in Herat to help make videos as a way to transfer knowledge to the more than 2,000 people we reach through Farmer Field School." Laila concluded that, "attending

the Digital Green workshop in New Delhi was a golden opportunity for me, and I hope to grow and do more video-based facilitation, since I both enjoy it and believe in its ability to help people."