Reaching resource-poor farmers: innovative partnerships in video-led extension

Edited by Noel Magor,
Ahmed Salahuddin, Rikin Gandhi, and Bill Hardy

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Contents

Foreword

The agricultural sector is a critical pillar of the Indian economy. It constitutes about 19% of gross domestic product and employs about 60% of the rural workforce, which comprises more than 103 million farmers. Of these, 85% are small and marginal farmers, with an average farm area of less than 2 ha.

The average farmer is typically constrained by bottlenecks across the entire value chain, denying him access to the best practices that agricultural science can offer, timely inputs, weather advisories, risk mitigation tools, credit, and market opportunities. Compounding the situation further is the nature of his land—fragmented, dispersed, and heterogeneous. Dependent on middlemen and disconnected from free information flow, farmers are stuck in a vicious circle of poor risk-taking ability, low investment, low productivity, poor market orientation, and therefore poor returns. Socioeconomic conditions also play a major role and inhibit the exchange of information through social interaction.

Traditional agricultural extension networks are fragmented and face several challenges in the "last-mile farmer reach." The seminal 2005 NSSO study on Indian agricultural extension mentions the fact that, in spite of efforts spanning decades, the combined reach is only 40% of rural India. Also, the McKinsey Food and Agriculture Integrated Development Action report (2004) says: "Lack of appropriate partnerships/ linkages between agriculture departments, agricultural universities, extension agencies, numerous farmer intermediaries, the private sector, and consumers does not give the true economic value to farmers' produce. Currently, the combined problem of low yield and high wastage and too many intermediaries in the procurement chain lock India's food industry into a vicious circle of low investment, low skill, low yield, low efficiency, and low value added."

The innovative use of ICT tools now enables the development of cost-effective, end-to-end solutions for farmers. An interactive two-way exchange of timely, cost-effective, and customizable information will now empower farmers to make appropriate farming and marketing decisions. Some such models are the iKisan, the Reuter Monitor Light, the mKrishi, ITC's e-choupal, and many others. Additionally, key development partners such as NGOs with good "last-mile farmer reach" generally lack the technical and customizable expertise in shaping the agricultural practices that they promote. Thus, possibilities exist for partnerships between technology providers, research organizations, and community aggregators to provide farmers with timely and specific solutions—for faster adoption and larger outreach. The challenge is to make the model user-friendly for resource-poor farmers. The multifarious bottlenecks

may be overcome with simple-to-operate lightweight equipment and nimble IT support.

Among the existing ICT initiatives, the Digital Green model of farmer-created and -led videos was found to possess potential for collaboration for large-scale outreach, adoption, and impact. CSISA and Digital Green thus partnered to test this concept with resource-poor farmers in Jamui and Munger districts in Bihar, India.

The results of this pilot engagement have been very encouraging and have demonstrated that such a collaborative video-led initiative, backed by a technically competent resource pool, can provide sustainable solutions to promote farmer adoption to scale, along with online feedback tools for monitoring and tracking progress.

M. Srinivas Rao
CEO
Cereal Systems Initiative
        for South Asia (CSISA)
New Delhi, India

Acronyms and abbreviations

AKRSP	Aga Khan Rural Support Programme
AP	Andhra Pradesh
ART	Adaptive Research Trial
ASA	Action for Social Advancement
ATMA	Agriculture Technology Management Agency
BMGF	Bill & Melinda Gates Foundation
BRLPS	Bihar Rural Livelihoods Promotion Society
CA	conservation agriculture
CBO	community-based organization
CEO	chief executive officer
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
COCO	Connect Online Connect Offline
CRP	community resource person
CRS	Catholic Relief Services
CSISA	Cereal Systems Initiative for South Asia
CSP	community service provider
DDG-R	deputy director general for research
DFID	Department for International Development
DG	Digital Green
DoA	Department of Agriculture
FFT	farmer field trial
GDP	gross domestic product
GDS	Grameen Development Services
GRiSP	Global Rice Science Partnership
HAC	Hub Advisory Committee
HO	head office
HQ	headquarters
ICAR	Indian Council for Agricultural Research
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IRRI	International Rice Research Institute
IWMI	International Water Management Institute
KB	Knowledge Bank
KVK	Krishi Vigyan Kendra
LOA	letter of agreement
MoU	memorandum of understanding
NABARD	National Bank for Agriculture and Rural Development
NARES	national agricultural research and extension systems
NGO	nongovernment organization
NRLM	National Rural Livelihood Mission
OUAT	Odisha University of Agriculture and Technology
PMU	Project Management Unit
PRADAN	Professional Assistance for Development Action
RAU	Regional Agricultural University
RCER	Regional Centre for Eastern Region

RO	regional office
SAU	State Agricultural University
SDTT	Sir Dorabji Tata Trust
SHG	self-help group
SO	state office
SP	service provider
STRASA	Stress-Tolerant Rice for Africa and South Asia
SWOT	strengths, weaknesses, opportunities, threats
ToT	Training of Trainers
UNICEF	United Nations Children's Fund
UP	Uttar Pradesh
USAID	United States Agency for International Development
VARRAT	Voluntary Association for Rural Reconstruction & Appropriate Technology
VDC	Village Development Committee
VRP	village resource person
ZT	zero-till

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The pilot process

At CSISA—M.S. Rao, CEO; Dr. R.K. Mallik, hub manager, central Bihar hub; Dr. Sudhir Singh, extension agronomist, central Bihar hub; Aanand Kumar, business model specialist; Poornima Ravi Shankar, knowledge management coordinator; other members of the CSISA PMU and central Bihar hub.

At Digital Green—Vinay Kumar, COO; Avinash Upadhayaya, regional program coordinator; Chandra Shekhar, program manager; Amrita Dhiman, program manager; other members at Digital Green Delhi and Madhya Pradesh.

CSISA partners—KVK Jamui, especially Pramod Singh.

Digital Green partners—ASA: Shamim and the Chakai team, Rahul Gautam and the Munger team.

Residents of selected villages of Chakai and Munger.

The review process

Organizations involved were Pragati, Orissa; Aga Khan Rural Support Program, Bihar; VARRAT, Orissa; Grameen Development Services, Bihar; KVK Jamui, Bihar; and ICAR–RCER, Bihar and Orissa.

Executive summary

The Cereal Systems Initiative for South Asia (CSISA), funded by the Bill & Melinda Gates Foundation and USAID, is a major joint initiative of IRRI, CIMMYT, ILRI, and IFPRI. Its vision of success over a 10-year period is the wide-scale adoption of resource-conserving practices that reach 6 million rural poor households with an annual income increase of at least US$350 per annum. Extensive partnerships with public, private, and civil society agencies are the principal means of dissemination. Digital Green (DG) is a relative newcomer to agricultural extension, operating in over 1,100 villages with more than 100,000 farmers across six states in India and Ethiopia, and it has developed a model that has been found to be at least 10 times more cost-effective per dollar spent compared with classical extension approaches. Its mission is to bring together technology and social organization to amplify the effectiveness of agricultural development efforts around the world.

CSISA seeks to reach large numbers of farmers, so collaborating with Digital Green was seen as an opportunity to leverage its technology-enabled model and grass-roots-level partnerships with local extension agencies and rural communities to improve the efficiency and efficacy of the approach. An agreement for an initial 6-month pilot in Bihar was signed in September 2011. The pilot essentially aimed to establish a two-way knowledge exchange among CSISA,

digitalGreen, an extension system, and the local community. The pilot involved 20 villages in Bihar in which digitalGreen had partnered with an extension system operated by an NGO, Action for Social Advancement (ASA), and linked with CSISA's Bihar hub as a resource for technologies.

This report documents the pilot and its review that culminated in a mini-workshop of the main actors and potential stakeholders in March 2012.

The pilot began with a gap analysis of ASA's existing set of interventions and those practices of the local communities to identify areas in which key CSISA technologies could either improve the quality of those interventions or practices or introduce an aspect that had not been addressed. The initiation of the pilot in this manner provided a platform for mutual understanding among stakeholders: that is, an appreciation of ASA and the farming community's existing practices and CSISA's research and knowledge expertise. Over the course of the pilot, 13 videos featuring CSISA technologies were produced, which were shown 250 times to small groups of farmers. The videos were produced in two languages, Hindi and Santhali. The farmers featured in the videos as well as those watching them were primarily women and marginal farmers.

The culminating review workshop, which included stakeholders from ICAR, KVKs, Digital Green's Odisha NGO partners, and representatives from

the CSISA hub, enabled sharing of the preliminary learning and challenges of the pilot as well as opportunities for taking forward the model that CSISA and Digital Green were able to demonstrate of linking research, extension, and communities in a knowledge exchange. Moreover, community-based extension organizations were able to share their reflections on the value of expert information from research institutions such as IRRI and programs such as CSISA and they were able to find value in being better able to socialize and localize their expert research and knowledge to reach a wider population of farmers and better inform their interventions based on usage data and farmer feedback.

CSISA and digitalGreen's collaboration could potentially be extended in collaboration with the Bihar Rural Livelihoods Promotion Society (BRLPS or JEEViKA), a state-level implementation agency of the government of India's National Rural Livelihoods Mission (NRLM). digitalGreen is in the process of extending its model to 10,000 villages in Andhra Pradesh and Bihar as a part of the NRLM. CSISA's hub in Bihar, for instance, could be a member of digitalGreen's technical advisory committee to review and validate videos produced by JEEViKA's network of extension agents and community intermediaries. In addition, a localized version of IRRI's Rice Knowledge Bank, the CSISA Knowledge Bank, and the ICAR Rice Knowledge Management Portal could be developed in Bihar that links with the socialized and localized videos produced by Digital Green and its partners as well as with data and feedback from the farming communities in which that knowledge is shared. Network models for each of these aspects are included in this report.

We expect that this model partnership can be mainstreamed in all existing and future CSISA hubs (CSISA II) in Bihar and Odisha. Other IRRI projects (e.g., STRASA and CRS-IRRI) and knowledge repositories could be linked to this platform to provide opportunities for greater dissemination, community feedback, and usage. The model could also be extended to other CSISA hubs outside India into other parts of South Asia (e.g., Bangladesh, Nepal, and Pakistan) and other IRRI locations around the world. This would require stronger coordination within IRRI. The findings of the pilot can also be a source of learning for expanding the Digital Green extension model and linking with other research institutions beyond IRRI as well.

Introduction

Food and income security are major concerns for resource-poor farm families in South Asia. Meeting this challenge is the highest priority for the Indian government and this is reflected in large government investment in rural development programs and in the complementing support of donor agencies. The Cereal Systems Initiative for South Asia (CSISA), funded by the Bill & Melinda Gates Foundation and USAID, is one such major initiative that is a joint undertaking of IRRI, CIMMYT, ILRI, and IFPRI. Its vision of success over a 10-year period is the wide-scale adoption of resource-conserving practices that reach 6 million rural poor households with an annual income increase of at least US$350 per annum (Annex 1). Extensive partnerships with public, private, and civil society agencies are the principal means of dissemination. Going to scale through partnerships necessitates innovations in extension. CSISA has almost completed its first 3 years. In this phase, it has completed much adaptive research and has begun dissemination of promising technologies. Large-scale dissemination and adoption of practices remain a challenge due to the hub's large geographic spread and limited staff. The work done in the first phase of CSISA shows that changes in the adoption of new technologies are under way and now there is a good chance to develop partnership with Digital Green, whose dissemination tools and techniques have been widely appreciated.

Digital Green (DG) has a mission to bring together technology and social organization to amplify the effectiveness of agricultural development efforts around the world. Digital Green has designed an innovative model that integrates with existing extension systems operated by public, private, and civil society partners and uses information and communication technologies to build upon the social networks that farmers already use to exchange information with one another. Digital Green trains these extension systems as well as members of the community to produce short videos on a variety of agricultural and related livelihood practices across relevant value chains. The videos break down complex information into 8–10-minute segments featuring local participants sharing testimonials, demonstrations, or interviews on aspects that range from group mobilization to financial savings and credit programs, access to inputs, agronomic practices and technologies, aggregation and marketing, and government schemes. These videos are then shared by mediators from the community who screen them to small groups of farmers, typically women self-help groups comprising 10–15 members, on a weekly basis using a battery-operated pico projector. The mediators capture the viewership, feedback, and usage of the featured practices

by farmers in their communities and provide additional support as needed. The videos, usage data, and community feedback are shared on an open-access Web site that enables extension systems to follow progress and align their programs to the needs and interests of the community using an analytics suite of dashboards. Preliminary studies have shown that the efficiency of the extension systems could be increased by a factor of 2–6 times, based on cost per adoption rate that decreased from $10–18 in a classical agricultural extension system to $3–4 in the same extension system integrated with the Digital Green model (Annex 2).

CSISA seeks to reach large numbers of farmers, so collaborating with Digital Green was seen as an opportunity to leverage its technology-enabled model and grass-roots-level partnerships with local extension agencies and rural communities to improve the efficiency and efficacy of the approach. An agreement for an initial 6-month pilot in Bihar was signed in September 2011. The pilot was funded by CSISA and IRRI (through the Global Rice Science Partnership, GRiSP, Program 6: Growth of the Rice Sector). The pilot built upon Digital Green's typical end-to-end model, which involved an extension system partner, Action for Social Advancement (ASA), and introduced a new dimension of establishing a two-way knowledge exchange between CSISA, Digital Green, ASA's extension system, and the local community. Following Digital Green's usual approach, the execution of field activities, such as video production and dissemination, was conducted by ASA's extension staff as well as intermediaries in the community that Digital Green trained to perform these tasks. CSISA's Bihar hub served as a source of expert knowledge and technologies that filled in gaps and provided additional support to ASA's extension staff as well as the small-scale farmers they were working with.

CSISA hub staff were involved primarily in four areas:

- analyzing existing practices and identifying relevant CSISA technologies;
- adapting, as appropriate, and demonstrating selected technologies to ASA and the local community;
- guiding and validating videos produced on CSISA techniques by video producers on ASA staff and the community to ensure their accuracy and completeness; and
- reviewing usage data and farmer feedback to aggregate demand for CSISA technologies, inform knowledge and research development processes, and iterate the production of new videos based on the community's needs and interests.

The primary objective of the pilot was to understand the processes involved in developing two-way knowledge exchange between CSISA and Digital Green. This learning will feed into Phase II for CSISA and IRRI, more broadly, as well as Digital Green's extension programs in India and other countries with CSISA, IRRI, and potentially other research agencies. Some of the key questions that the pilot aimed to answer included:

- Could a research-based program such as CSISA effectively deliver new technology with Digital Green's extension approach as an additional pathway in a multiactor dissemination model?
- Could Digital Green's extension approach benefit with the expertise of research organizations linked through the research and knowledge expertise of CSISA?

This report covers the preliminary experience of this partnership through March 2012.

The Digital Green–CSISA pilot partnership experience

The 3 years of Phase I of CSISA established a foundation for technology validation and adaptive research. During this period, the dominant model of extension was through the adaptive research trials conducted by members of CSISA's hub team/multiple CSISA partners/CSISA champion farmers through direct and indirect engagement with farmers. CSISA's ambitious delivery and adoption targets will be strengthened by tapping into the delivery mechanisms of local extension partners. The initial meetings of CSISA and Digital Green's CEOs in late 2010 served as the beginning of one such partnership.

Initial assessment

CSISA's existing extension system, which relies heavily on its hub teams, is cost-intensive. Digital Green has shown that it is able to improve the efficiency of extension services with a technology-enabled model that partners with grass-roots-level development agencies and community-based organizations. CSISA was interested in piloting collaboration with Digital Green as it offered the potential to reduce costs, scale-up through partners using the hub's technical assistance rather than physical interventions, minimize the dilution of information typical in most cascading training models, capture usage data and feedback, increase adoption rates of CSISA technologies with improved transparency traceability, and take CSISA technologies to areas where the physical reach of the hub was not possible. CSISA and DG gained familiarity and comfort with each other over several seminar presentations to various members of CSISA and IRRI's team in Delhi, two visits by Digital Green's CEO to IRRI-Philippines, and field visits by CSISA's team to established locations in which Digital Green had been operating. The timeline of these dialogues is summarized in Table 1.[1]

Once there was an understanding of the potential of the Digital Green approach within the CSISA PMU, due diligence of the Digital Green approach was conducted through formal and informal channels, field visits, and feedback and references from several sources (including Digital Green's existing partners and funders). During this time, some misunderstandings occurred within CSISA on how to develop a pilot partnership:

- Some emphasized the video production process and were concerned about ensuring content quality and considering whether CSISA itself could produce videos for its key

[1]The timeline for building the relationship between CSISA, IRRI, and DG illustrates the process that is needed for mutual understanding and to develop a win-win partnership.

Table 1. Timeline of progress: CSISA and Digital Green in the development of the partnership through to the signing of the agreement.

Date	Significant event	Comment
Nov. 2010-Feb. 2011	Introduced by CEO, CSISA (who could see the potential of the collaboration)	DG gave three presentations, once to the CSISA PMU, then to CSISA and IRRI-India leadership, and finally to Dr. Dobermann (IRRI DDG-R). This helped create buy-in to the concept. Additionally, two concept notes were prepared for wider circulation within CSISA.
March-May 2011	Digital Green's CEO was invited to IRRI-Philippines to give a seminar.	This helped create awareness and buy-in for Digital Green within IRRI.
	CSISA team visit to Madhya Pradesh, India, to observe end-to-end Digital Green system at an established location.	The visit helped the CSISA team understand components of the Digital Green approach *in situ*.
	Rikin Gandhi and Avinash Upadhyay (DG) visited IRRI-Philippines and met with Noel Magor (IRRI Training Center head).	First concrete discussion about a pilot.
June 2011	Concept note was discussed; decided to initiate a pilot activity.	
July 2011	One Digital Green and one CSISA staff member attended a video training organized by Agro-Insight in Bangladesh.	This helped develop camaraderie and also open CSISA staff to using farmer-led videos as a tool for extension.
	First round of discussions involved matching interests of two parties and identifying opportunities for geographic convergence, which took some time to achieve agreement. At one point, CSISA was interested in producing videos by hub staff, but acceptance of practical considerations brought Digital Green and CSISA together.	CSISA did not want to burden hub staff who were already overstretched with their workload. Additionally, the intent was to promote partnerships and work through Digital Green's established approach.
August 2011	IRRI communication person visited Digital Green sites in Odisha; CSISA explored partnership network and possibilities in Bihar.	IRRI communication team produced a video in Indonesia, but did not carry forward other aspects of Digital Green model and activities were not sustained without a concerted focus.
Sep. 2011	Survey and identification of geographic focus, extension partner, and development of LOA; Noel Magor visited India.	IRRI, Digital Green, and CSISA committed to the 6-month pilot project with funding from IRRI GRiSP Program 6 and CSISA.
14-16 September 2011	Initial site visit by CSISA team to conduct in-depth need analysis of extension partner and farming community	

technologies. For overstretched hub staff, such a direction would create an additional workload. Digital Green suggested that such an approach could be accommodated in its model, but that the end-to-end extension system was most critical. Over time, CSISA developed an openness to its role of providing technical oversight to the content produced and disseminated while allowing for Digital Green and its extension system partner to be responsible for socializing and localizing it.

■ Others were concerned about Digital Green's level of experience and rapid growth. Digital Green suggested that it would not be in a position to take up the pilot in any location as coordination of its own team as well as integration with the end-to-end extension system would require identifying a site for the pilot that had geographic convergence with Digital Green and CSISA's existing programs.

The challenge of geographic convergence for CSISA and DG

Initially, CSISA requested Digital Green to work with its hub in eastern Uttar Pradesh but Digital Green noted that it did not have partnerships or operations there at the time. Digital Green suggested Madhya Pradesh or Odisha for the pilot, but CSISA did not have hubs in those states at the time.

It was important to identify a location of geographic convergence where a CSISA hub site was in the vicinity of a location where Digital Green and its partners were operating. Bihar

was eventually identified as a common geography in which CSISA and Digital Green's programs were gaining traction in the state. CSISA has a hub in Begusarai District of Bihar and Digital Green was working with one of its extension system partners, ASA, in two districts (Jamui and Purnia) of Bihar. Bihar was also a priority focus area for Digital Green as it was gearing up to expand its operations to 5,000 villages with JEEViKA.

The selection of a location for a pilot within Bihar balanced minimizing the distance from CSISA's hub and the locations of Digital Green's existing operations in the state. Chakai block of Jamui District was selected as a site to start with since Digital Green was working with ASA there and CSISA had an extension partner in the district. Unfortunately, the Chakai block area was found to be not very conducive to the demonstration of CSISA's conservation agriculture (CA) technologies because of the undulating terrain. Subsequently, Munger was selected as an additional district in the pilot. ASA was already working in that district, but Digital Green had not begun its activities with that team. Since it was in relative proximity to CSISA's team and offered the potential for a greater set of CSISA's technologies, Digital Green agreed to begin work with ASA's team in Munger as a part of the pilot. The geographies selected for the pilot are highlighted on the map below.

The local partner: Action for Social Advancement (ASA)

It was important to conduct the pilot with a partner with which Digital Green was already working to be able to introduce CSISA's knowledge and technologies within the context of an existing end-to-end extension system. It would have been
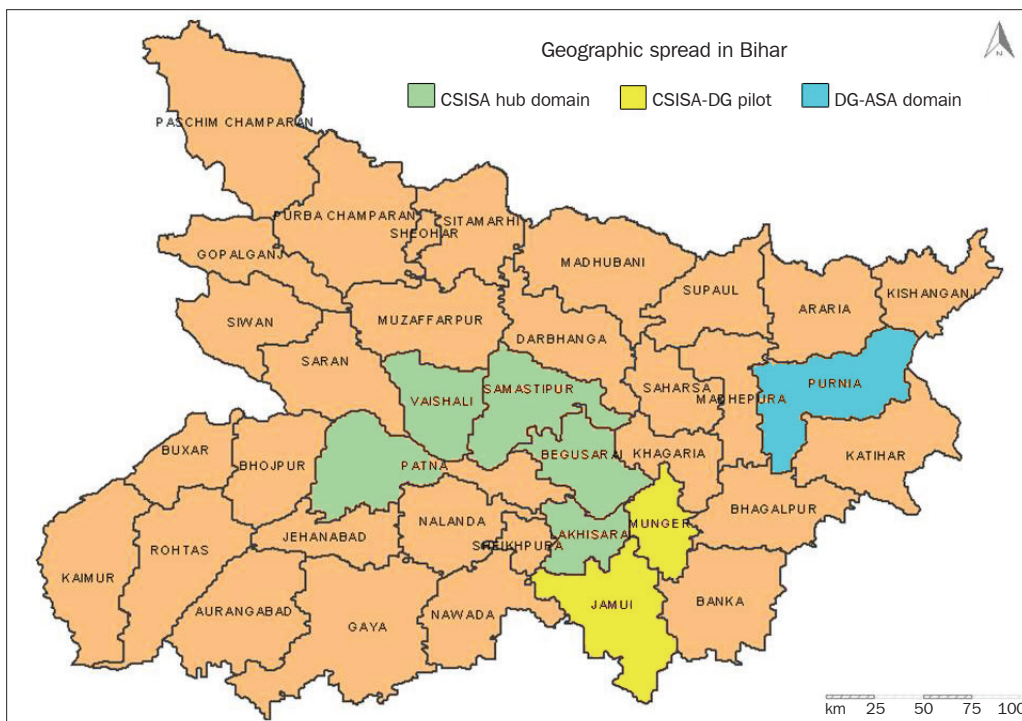
Fig. 1. Spread in Bihar—Jamui District was an overlap with the CSISA Bihar hub domain while Munger District was adjacent to existing CSISA districts.

possible to initiate the pilot with one of CSISA's partners, but there would be a learning curve for a new organization to adapt and institutionalize the Digital Green system within its operational context. The other alternative of having CSISA directly implement the Digital Green system, as mentioned earlier, was untenable as it would deviate from its core mandate and resource structure.

Digital Green had an established relationship with an NGO, Action for Social Advancement (ASA), with which it was working in Madhya Pradesh and Bihar. ASA aims to improve the livelihoods for 3 million poor people through developmental services. ASA's approach is firmly founded upon participatory action at the community level. The organization's ethos is to develop livelihood security by facilitating a participatory process of natural resource management and local institutional development. Particular

emphasis is placed upon the poor and women. ASA works directly with more than 120,000 poor (tribal and other socially disadvantaged communities) families in more than 1,000 villages implementing various rural development programs, covering 18 districts in Madhya Pradesh and Bihar. ASA's Livelihood Model describes its extension model and focus on working with poor farmers (see Annex 4).

Reaching agreement for the pilot

The discussions to initiate the pilot were finalized in September 2011, but timing posed an additional challenge as the rabi (autumn) season was already under way. If the pilot did not begin in the current rabi season, there would not have been an opportunity to pilot the partnership

within CSISA Phase I. At the same time, Digital Green was gearing up for large scaling-up with India's National Rural Livelihood Mission in Andhra Pradesh and Bihar. IRRI decided to move quickly on the pilot by arranging funding through GRiSP Program 6 and a limited amount from CSISA. This decision allowed the pilot to get started within a short time and provided the opportunity to develop the learning shared in this report as well as to catalyze a potentially more expansive partnership between CSISA, IRRI, and Digital Green.

Main components of the pilot

Under the agreement (see Annex 5, Letter of Agreement):

- CSISA, Digital Green, and ASA would identify a common geographic area for the pilot.

Key commitments from Digital Green would be to

- Provide an experienced staff person for managing the pilot in Bihar (given Digital Green's rapidly expanding programs, this commitment was critical).
- Build the capacity of its extension system partner (ASA) and equip communities in the 20 villages to implement its video-enabled extension model to accelerate the delivery of CSISA's conservation agriculture technologies and practices.
- Disseminate CSISA technologies through Digital Green's extension protocol.
- Use Digital Green's analytics dashboards to track and assess the take-up of its extension program in the 20 villages and the adoption of the technologies.

The CSISA Bihar hub would

- Build or help build the capacity of Digital Green's extension system partner staff members, community video producers, and village facilitators on CSISA technologies and packages of practices.
- Provide access to the communication materials from the CSISA Knowledge Bank and other sources as appropriate for supporting the dissemination of CA technologies.

The pilot experience

Table 2 captures the significant events that contributed to the progress of the partnership so far.

Needs analysis and the crop calendar

CSISA and Digital Green agreed that it wouldn't be possible to simply produce videos on CSISA's conservation agriculture (CA) technologies without involving the local extension system partner (ASA) and the community. Consequently, a survey was conducted to document the existing interventions of ASA and the practices currently followed by the farming community. A demand analysis was used to assess the needs to determine the relevance and appropriateness of CSISA's technologies (https://docs.google.com/open?id=0B8-cK9Md_iD8ek9nMmM1SDk1UFU). This analysis was carried out initially in Chakai and Munger with CSISA central Bihar hub's extension agronomist. Based on this analysis, a detailed crop calendar for February and March was developed detailing which practices would be appropriate in various time and

Table 2. Timeline for the pilot experience.

Date	Significant event	Comment
29 Sep. 2011	LOA signed by CSISA	
2 Oct. 2011	LOA and pilot contract signed by DG	
Oct. 2011	Gap analysis started	Surveyed Chakai, interviewed Digital Green partner ASA farmers, conducted baseline in 15 villages, recorded existing agri-practices promoted by ASA.
	Final areas decided; Chakai in Jamui and Asargunj and Bariarpur in Munger	
Nov. 2011	Matching of CSISA technology with ASA and farmer needs	Early analysis conducted by Chandra Shekhar from Digital Green and Aanand Kumar and Poornima Ravi Shankar from CSISA to identify the sets of CSISA practices that would be immediately useful; assessing opportunities; matching with ASA working area.
	Chakai and Munger villages were selected	Gap analysis; Digital Green could make it a module to be used for a future project/program with other research or knowledge partners.
Dec. 2011	Experienced DG staff deputed from Odisha; final planning, crop calendar prepared; change in leadership of ASA	
	Demos were planned and implemented based on findings of gap analysis	
	First storyboard and approval of storyboards	
	Started to establish relationship with ASA in Munger.	In Munger, ASA did not have video component in its program.
Jan. 2012	First video on Super Bag was developed	
Dec. 2011-Jan. 2012	The CEO of DG, Rikin Gandhi, met with the CEO of CSISA, Srinivas Rao.	Discussed issues that could hinder project progress; started to keep Srinivas Rao in the loop to regularly update him; this helped make things clearer.
	Things started to move fast as Chandra Shekhar was in place in Bihar permanently; demand analysis was conducted in Munger.	Started to communicate with more people in CSISA to keep them updated on progress.
15 Jan. to 15 Feb. 2012	Development of video production was delayed because of delay in establishment of demos.	Delays matching time between CSISA hub and video production team were a problem.
	Storyboards written and approved; video production and approval continued; video dissemination and adoption tracking started	
	Reviewed progress	Visited both locations, communicated through email, sorted out some problems that delayed the process; tried monthly conference calls, which did not work, but continued to communicate through email.
21-26 Mar. 2012	Joint IRRI-CSISA-DG review	Learned lessons from the pilot exercise of last five months.

geographic dimensions. This was used to develop a schedule for video production (see calendar in Annex 6).

Technology demonstration and validation

CSISA hub staff were involved primarily in four areas:

- analyzing existing practices and identifying relevant CSISA technologies;
- adapting, as appropriate, and demonstrating selected technologies to ASA and the local community;
- guiding and validating videos produced on CSISA techniques by video producers with the ASA staff and with the community to ensure their accuracy and completeness; and
- reviewing usage data and farmer feedback to aggregate demand for CSISA technologies,

inform knowledge and research development processes, and iterate the production of new videos based on the community's needs and interests. The hub manager provided a critical technical assistance and coordination function in each of these areas.

A process was established in which the CKB coordinator in CSISA's PMU acted as the nodal contact. She coordinated with the hub manager to review and validate content and recommend edits as necessary. Accepted storyboards were sent to Digital Green with approval to go forward with video production. A similar process was followed for the videos: approval was granted for dissemination if the final video maintained the technical accuracy and completeness of the information.

The process of topic identification and its technical validation is outlined in Table 3.

Table 3. Process of topic identification.

Activity	Responsibility
1. Demand analysis	
1.1. Familiarization with geographic area through a desktop study	
1.2. Needs assessment directly with farmers	
1.3. Topic identification	DG + DG partner + CSISA PMU + CSISA hub
2. Storyboarding	DG + DG partner
3. Technical validation process	
3.1. Receiving storyboards and initial assessments	
3.2. Hub manager discussions and modifications as per requirement	
3.3. Storyboard approval	CSISA PMU + CSISA hub
4. Video production	DG + DG partner
5. Video approval process (remake of videos and edits as required)	CSISA PMU + CSISA hub
6. Dissemination	DG partner
7. Feedback	DG partner + CSISA hub
8. Adoption	DG + DG partner
9. Adoption tracking	DG + DG partner

Table 4. Progress on the development of videos under the pilot project. As of 31 March 2012.

Item	Number
Videos produced	13
Videos already approved by CSISA	4
Videos pending approval	4
Videos not sent for approval	3
Videos rejected	2
Videos developed in Hindi for Munger	8
Videos developed in Santhali for Jamui	5

Progress update on video development and dissemination

As noted in Table 4, within a short duration, this pilot has resulted in the production of several videos produced in Hindi and Santhali languages, which feature local video producers and farmers.

Digital Green's analytics dashboards have tracked the following dissemination of CSISA-based videos as of March 2012 (Table 5). A more detailed report is included in Annex 6. All of these data are available in near real-time on Digital Green's open-access Web site: http://analytics.Digital Green.org.

Table 5. Latest progress as extracted from Digital Green's analytics dashboards.

Video	Dissemination	Adoption	Viewers	Questions asked
Munger				
Super Bag for grain storage	39	0	574	83
Super Bag for community seed storage	0	0	0	0
Weeding in wheat using conoweeder	50	Data capture in progress	732	102
Jamui				
Super Bag for community seed storage	12	0	145	57
Super Bag for grain storage	12	0	134	47
Weeding in wheat using conoweeder	19	24	373	133

Reflections and lessons learned

The review exercise

The review of the pilot activities followed a systematic framework for capturing the lessons learned, which was developed in consultation with the review team well ahead of the actual review in the field. It included a setting of the objective of the review, agenda, steps and tools to be used to interact with different partners at different points of time, a tentative plan for a mini-workshop planned at the end of the field activities, and a tentative visit schedule for the whole week of the review. A copy of the framework is presented in Annex 6.

A joint IRRI-CSISA-Digital Green team traveled together in the field during 21-25 March 2011 and met with ASA's team in Munger and Chakai and farmers in two villages, Amaiyaa in Munger and Gahima in Jamui. The team met with 19 farmers, one self-help group (SHG) in Amaiyaa, and one SHG in Gahima. In both Amaiyaa and Gahima, the review team observed live video disseminations and conducted focus group discussions to assess the community's feedback. The review team had nine members (Table 6)

After the field visits, the IRRI team conducted a reflection exercise one-on-one with the Digital Green and CSISA teams.

On the closing day, a mini-workshop was held in Patna, Bihar, with CSISA and Digital Green's staff, existing partners, and potential collaborators from Bihar and Odisha. During the workshop, CSISA and DG teams shared their reflections from the exercises. Other partners not directly linked with this pilot shared details of their existing agricultural extension activities and their work with CSISA or Digital Green. Those partners working with CSISA but not with Digital Green strategized how they might connect with its video-enabled model. Those partners working with Digital Green but not with CSISA conceptualized how they might be able to link with its expert knowledge base.

Table 6. The review team.

CSISA Delhi	Digital Green	CSISA hub	IRRI
Poornima Ravi Shankar	Rikin Gandhi	Sudhir Singh	Noel Magor
Aanand Kumar	Avinash Upadhyay		Ahmad Salahuddin
	Chandra Shekhar		
	Amrita Dhiman		

The participants shared tentative plans on how to move the initiative forward. There was consensus on the importance of the exchange learning and of plans for doing this when moving forward. A list of participants appears in Annex 7.

Reflections

The pilot had been in operation for only five months at the time of the review. It was not appropriate to expect an impact on the livelihoods of poor farmers or on the extension agents within that period. The visiting team was aware of that reality and was willing to explore early evidence of impact in terms of reflections from all actors involved in the partnership. Discussions were held with farmers in two villages for a short period of time, with the ASA field team, with Digital Green's management and field team, with the CSISA hub and persons in Delhi involved directly, and with other potential stakeholders in Bihar and Odisha.

Farmers

The team visited three villages, but had the opportunity to interact with farmers in two villages, Amaiyaa and Gahima. In those two villages, focus group discussion sessions were conducted with participants of a regular video dissemination. Most farmers appeared poor. In Amaiyaa, there were mixed groups of men and women and in Gahima there were all women. They had watched both CSISA and non-CSISA technology videos and commented on both. Some of the comments made by the farmers were the following.

Feedback from Munger: Farmers in general appreciated the videos but also wanted the videos supplemented with live demonstrations of the technology. They did appreciate the reductions in cost and time as a result of using videos.

The capacity of retention was more with videos. The farmers have watched, learned, and adopted from the videos. This was seen in the case of the "Water management in maize" video, wherein the farmers, after watching the video, checked moisture levels in the field before irrigation. There was positive interest in technologies such as seed treatment and Super Bags.

Feedback from Jamui: Farmers from Gahima in Jamui liked the fact that other farmers from other villages were able to see and learn from their videos. Earlier messages used to be given only to one person; now all of them could sit together and watch the videos and learn together. This has led to more interactions among the group as well. They appreciated the quantum of information given through a video and stated that it has been very profitable for them to work as a group. Farmers in Gahima are organized into SHGs and practice community farming. They also wanted videos supplemented with live demonstrations.

ASA

ASA has a number of donor-funded agricultural extension projects in Madhya Pradesh and Bihar. They use participatory approaches for extension in their regular activities. Since they started working with Digital Green, they have become increasingly convinced about the usefulness of the Digital Green extension approach with videos as an effective tool for extension and they started to use videos for other projects/programs as well. Table 7 compares their standard extension approach and the Digital Green model.

ASA's Munger staff are convinced about the effectiveness of Digital Green's model. They thought that it has advantages as it is much more cost-effective than their existing extension approach and is scalable. It reduces system loss/distortion in the technological information that is shared

Table 7. Comparison between ASA model and the DG model of extension.

ASA model	ASA with DG
Identify villages and resource persons, and assess extension plan	Concept sharing
Identify areas of extension support	Identification of village resource persons
Develop training materials	Training on DG components such as video production dissemination, editing
Conduct training programs group-wise, village-wise, or hold demonstrations and one-to-one farmer interaction	Participatory content production
Use village-level wall writings; distribute leaflets	Dissemination scheduling/planning
Give in-the-field support	Dissemination—mediated
	Feedback

with farmers. It is for this reason that they have started to use a video-enabled extension approach in some of their other ongoing projects/programs.

Challenges of the CSISA-DG video pilot exercise as observed by the ASA team in the pilot were

- Changes in the leadership in ASA
- A short time but a big task
- Lack of regular electricity supply
- Respective persons need practical training
- Data entry

Digital Green

The event was a joint IRRI-CSISA-DG review of the pilot exercise. Digital Green's CEO, regional program coordinator, assistant development manager, and a field officer participated in the review as team members. Their participation was full-time. They assessed the effectiveness of the pilot at all levels and also shared their experiences in the field and in the workshop.

First, Digital Green has identified important events during the pilot period and indicated their significance and learning issues; a summary of the observations has been incorporated with the timelines reported early for lead-up to an LOA and the pilot activities (see Table 2).

Second, Digital Green has a data management framework (*COCO*) and analytics suite of dashboards on their Web site that provides access to the latest statistics on the progress of the ongoing piloting activities. A summary of the progress on dissemination made so far is presented in Table 8. The detailed report is available in Annex 8.

Third, DG analyzed its network of partners for the pilot project and outlined its effectiveness based on the pilot experience. The network map identified all actors they are in interaction with now and showed the nature of the relationship—all the actors are linked to each other. The network map presents the actors and their relationship and the outcome from the analysis is presented in a SWOT format below.

Strengths
- Researched validated content in simple form
- Socialization and localization of expert information
- Communication of feedback and usage of data for expert information
- Geographic convergence of partners' programs

Table 8. Progress on dissemination of videos.

Video	Dissemination (no. of times video shown)	Adoption (no. of adopters)	Viewers (no.)	Questions asked (no.)
Munger				
Super Bag for grain storage	81	0	1,131	177
Super Bag for community seed storage	13 + 9 (yet to be entered)	0	172	25
Weeding in wheat using conoweeder	50	Data capture in progress	732	102
Jamui				
Super Bag for community seed storage	23 + 9 (yet to be entered)	–	486	157
Super Bag for grain storage	23 + 7 (yet to be entered)	–	496	163
Weeding in wheat using conoweeder	22 + 4 (yet to be entered)	47	433	152
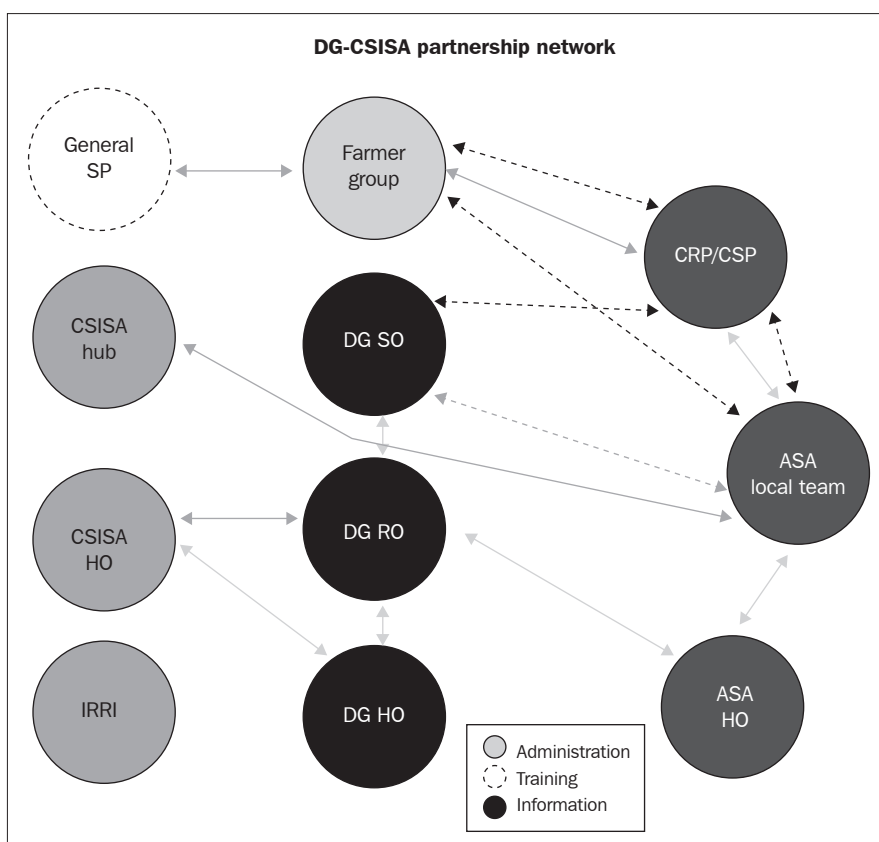
- Facilitated two-way exchange between research, extension, and community
- Closing gaps and strengthening interventions of existing partners and community practices with CSISA technology
- Participatory needs assessment approach

Weaknesses
- Not all CSISA technology is relevant in common geographic zones
- Began in an area (Munger) where DG was not in earlier operation
- Limitation/delays in timeliness of disseminating CSISA technology as per crop calendar
- Lack of advanced linkages with service providers that make the information have value, for example, the Super Bag
- Variable appropriateness of selected CSISA technology for particular community based on socioeconomic status, agroecology, etc.
- Since a new location was piloted, the extension capacity of partner had to be developed

Opportunities
- Extension partners able to access a technology and research organization
- Use experience to replicate partnership approach with existing DG partners
- Analyzing opportunities to apply the full range of CSISA technology
- Extending complex and simple technologies to a broad population of farmers
- Use approach to link with service providers and institutions for improved market integration

- Expansion potential with DG's anticipated scaling up with government partners in Bihar, Odisha, and Andhra Pradesh
- Link videos produced with local extension partners to credible research agencies
- Bring together extension and research partners onto a single platform, that is, DG's technical advisory committee
- Develop small-farm enterprise knowledge bank for Bihar to connect with extension partners, DG videos, and community feedback/data
- Partnerships between IRRI and DG and international centers in other countries

Threats
- Dilution of content between research and extension partners that develop local videos
- Lack of response to community feedback by research and extension partners
- Lack of streamlined processes in content approval and field demonstration
- Credibility and relevance of knowledge and data exchanged between research, extension, and community

Fourth, Digital Green's team captured the impact potential of the pilot project from its point of view. The flow diagram below presents Digital Green's assessment of what organizational impact it foresees/anticipates from such a partnership.

Digital Green's team indicated consistency with its work in other areas:
- Reduces extension human resources by 80%
- Improves quality of content shared through extension system relative to cascaded training model

Organizational impact of DG-CSISA partnership

> Realize potential of two-way exchange by and with research, extenson, and the community in a concrete manner that can be replicated with other research, extension, and community partners

■ Going beyond usage data and community feedback in valuing information, that is, not just a pipeline to distribute information

■ Gap analysis with extension partner and community

> Greater responsibility and credibility for knowledge exchanged between extension partners and farming communities

■ Analyze and accredit existing practices and technology of partners and communities while filling gaps and strengthening interventions with expert information

■ Strengthen quality of content at the time of production with peer-reviewed and validated sources of information

> DG-CSISA partnership

■ Consistently gaining information
■ Community engaged with videos as "seeing is believing"

In addition, the pilot has indicated some important insights for working with research partners. These are important statements and will be commented on further below:

■ Mediated dissemination process effective for introducing CSISA practices and technology
■ Institutional confidence developed with the research agency
■ Feedback and data to better understand issues and usage of CSISA technologies

■ Driving institutional change among NGOs and government agencies to engage with research community

CSISA Bihar hub manager's view

The CSISA hub manager was engaged in the pilot activities and was the key technical knowledge source for the field team (DG and ASA) and the farmers. In an informal discussion with the visiting team, the hub manager commented the following:

■ Video is a very good option for technology extension
■ Videos can reach areas where the hub cannot reach
■ The dissemination system of Digital Green is good

Partnership network—CSISA
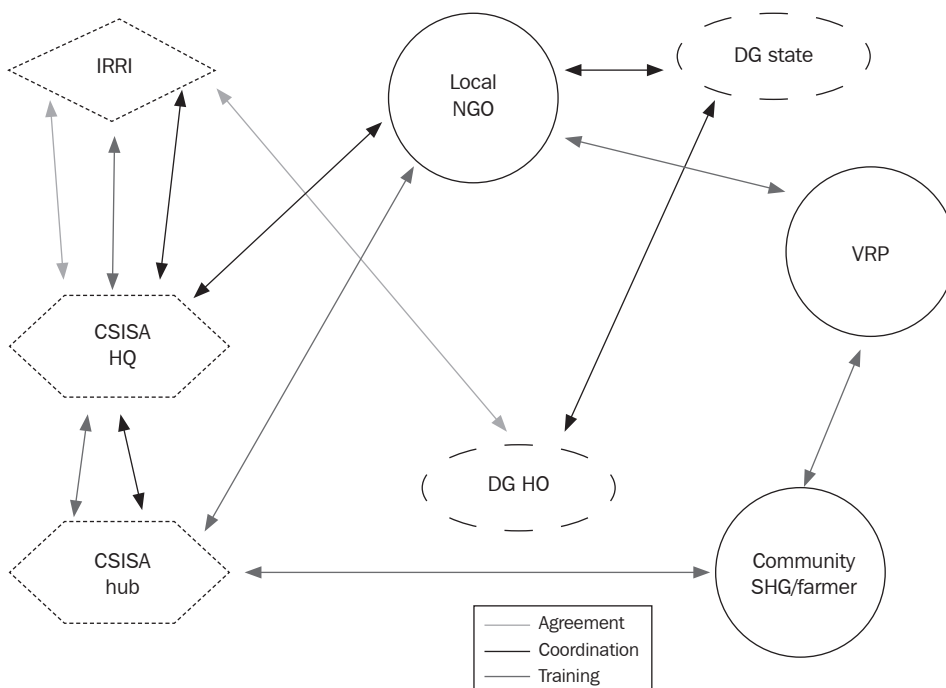
- Videos were made based on farmers' demand
- Simple technology is used
- Working with limited human resources
- Collecting a huge number of farmers
- "I liked very much"—it is in interactive mode
- Questions from farmers are recorded

CSISA review team

The CSISA team separately prepared a network map from their point of view and conducted a SWOT analysis. Below are their reflections about the pilot project:

Strengths

- **Ease of communication:** The process has established a very easy and friendly line of communication between the CSISA communications group, Digital Green field and administrative staff, the CSISA hub, and the Digital Green NGO partner Action for Social Advancement (ASA).
- **Technical validity of Digital Green videos:** Though Digital Green has had a technical validation committee for its videos in place, a need was felt to strengthen their technical content. This partnership has given that strength to Digital Green. The storyboards and videos are now technically validated by CSISA organizations such as IRRI, ILRI, and CIMMYT and credible, comprehensible videos on CSISA technologies now effectively reach resource-poor farmers.

- **Speed:** The speed of technology dissemination; of clarification of queries and doubts regarding the technology; of network establishment between the stakeholder, the hub, the Hub Advisory Committee (HAC), and the local service provider; of adoption; and of adoption tracking using the Digital Green analytics dashboard has been adequate.
- **Digital Green analytics:** Third-party validation and unbiased assessment of CSISA technologies are being done, and valid questions are being duly recorded and tracked over time.
- **Scale:** Partnership can take CSISA technologies to areas the hub cannot reach given the geographic spread, staff strength, and workload of the hub.
- **Demand-led videos:** Videos are based on farmer interest and demand and research tailored to meet farmer demand.

Weaknesses
- The current mindset within CSISA sees limitations in this venture. There is a need to understand this form of partnership in which the onus of extension is on the partner with the role of CSISA being limited to that of technical content validation and to foresee its possibilities and implications.
- The CSISA hub has limited strength to lead demonstrations in Digital Green dissemination areas given the spread of its work.

Opportunities
- **Scale:** Given the limitations of human and other resources, the potential for upscaling is huge using an independent model of

this nature. Larger areas can be covered both within and outside the hub domains, with CSISA's role being limited to technical validation and expertise.
- **Simplification of CA-based technologies:** CA-based technologies have often been considered complex, not very easily implementable, and very research dependent. This process has the ability and possibility of breaking down complex technologies into comprehensible digestible bits. There is also the possibility of a series of videos on a topic, thereby covering every nuance of a technology.
- **Sustainability:** CA-based and CSISA technologies have the potential of feeding into the knowledge pool of the partners, with the content being requested by the stakeholders. This would then set the way for the process to be financially independent and donor funding could be limited to specific interest-based inputs. This would ensure sustainability.
- **Expansion of partnership network:** As the process is demand-led, there is a possibility that new partners will invest in the process, thereby leading to the expansion of the existing partnership network.
- **Regional Knowledge Banks**: Broadbased knowledge banks could be developed to support Digital Green activities, such as the JEEViKA Knowledge Bank/ Regional Knowledge Bank.

Threats
- **Subsidy creating bias in adoption**: Frequently, new technologies in agriculture, once broken down into implementable bits, are promoted through donor-led initiatives with a clear

mandate, with an assumption that promotion will lead to adaptation and subsequent adoption. Rather than being a demand-led activity, the supply-push focus gives very short-term results that imply that targets get achieved in a project mode without creating any long-term significant change. Once the funds stop as targets are met, there is no interest among the project personnel to push this "new" activity.

Potential impact of the pilot from the CSISA team's view

Extension of CSISA technologies using the Digital Green video extension approach could have many potential impacts:

- Large projects/organizations supplement traditional extension methods with the Digital Green system to achieve scale.
- The HAC of a hub could guide and direct suppliers in that area to respond directly to farmer demand.
- There is potential for a drastic decrease in the cost of extension.
- Technologies being led and promoted by partners will see an increase in scale, eventually raising demand and influencing policy-level changes in the system.
- The process also has the potential to strengthen the concept of custom hiring for small farmers, thereby creating an efficient service-provider industry.
- The process also has the potential to see the participatory process entering into the research system, eventually leading to farmer-demand-led research.

The potential impacts are represented in the impact diagram below.

Organizational impact of the pilot as perceived by the CSISA team
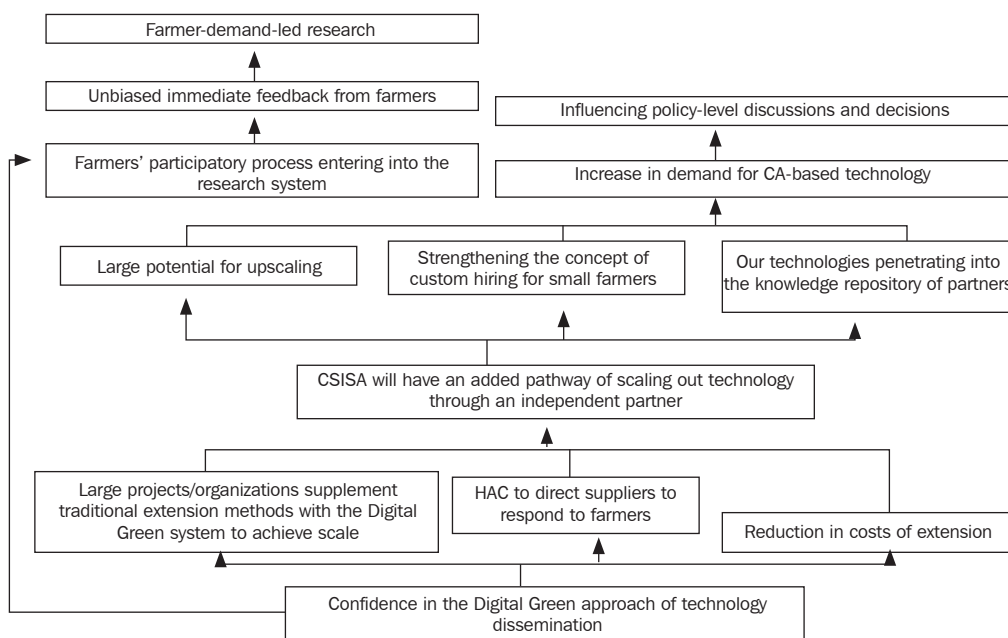
Perception of networks: CSISA, DG, and other partners

For many of the participants of the mini-workshop, it was the first time that government and international research agencies participated with NGOs on agricultural extension issues. NGO representatives suggested that the research agencies have to bridge the gap that they have in communicating technological knowledge to farmers on agriculture. Research agencies do have limitations in reaching target farmers and, for this, civil society organizations can play a role. There is a need to think about how that can be achieved. NGOs were impressed to observe the research institutes' keenness to link farmer need/demand with the research outputs available that will greatly benefit farmers. Some of them showed their interest in being involved with CSISA in the process of expansion of the pilot to other geographic areas.

Digital Green found the partnership very important and productive. They were able to understand how they could upscale the model in other areas and with similar national and international agricultural research agency partners. The experience gave them confidence.

The learning process and the tools used to learn the process were found useful by the participants and these together helped to develop ideas and confidence about the pilot and its future upscaling.

Some participants found the workshop to be an important event that successfully managed to identify important actors to up-scale the learning. They thought that CSISA-DG could move to the next level and use the forum/network as appropriate.

Possibilities of future linkages and potential for scale (avenues opening up)

Actors who participated in the mini-workshop showed their interest in being part of the video-led extension approach of Digital Green and also in CSISA technologies. PRAGATI, GDS, VARRAT, and AKRSP (each being an NGO) are already involved in agricultural technology dissemination activities as part of their overall livelihood-based improvement strategies. They recognized the importance and significance of agriculture as a means to change the livelihoods of their poor men and women client groups and also recognized the potential of the use of a video-enabled extension approach for disseminating agricultural knowledge fast in a cost-effective manner. The individual extension network diagrams developed by each partner are presented in Annex 9. These diagrams can be used in follow-up discussions as to how they make use of the DG-CSISA-type video-based extension model in their model of extension.

PRAGATI is active in one district of Odisha covering 189 villages and working with 7,000 farmers. They have been working with Digital Green since 2010 and have produced about 150 videos. They have a strong network at district and national levels. VARRAT, active in 130 villages and covering about 8,000 farmers, is already a partner of Digital Green. It has produced about 180 videos and would be interested in being involved with CSISA to access its repository of knowledge and technologies. GDS is active in two districts of Bihar, Muzaffarpur and Sitamarhi, is a partner in the STRASA project, and is also in contact with CSISA at a low profile, and they would be interested in being involved in such a partnership. AKRSP

is active in two districts, Samastipur and Muzaffarpur, and mostly works with poor farmers. It is interested in expanding its program in Bihar.

KVK Jamui covers all of Jamui District and also part of Lakhisarai block, covering 186 villages and about 20,000 households.

ICAR Patna developed a model approach for developing videos based on success cases with self-help groups as a part of a DFID-funded project. Videos were made on technologies as prioritized by the farmers. Those videos were then disseminated through different social welfare schemes. They would be interested in linking with CSISA and leveraging their experience.

The stakeholders mentioned above scoped their existing networks for accessing knowledge and disseminating technologies and for collaborating with one another to scale up and sustain their respective programs. The photograph below captures all the actors that the participants have mentioned with whom they have a relationship or that are seen as potential partners for the desired upscaling activities. These actor networks and relationships could be used to a great extent to expand the video-enabled extension approach for agricultural technologies in general and CSISA technologies in particular in Bihar and Odisha. It should be noted that the actors are mentioned here, but there will be a need to link these actors with some kind of relationship based on their potential. While establishing such relationships, the spatial aspects of partner network potential in Bihar and Odisha may also be considered according to the status of their presence in those two states. Follow-up one-on-one and group discussions would be required to align some of those relationships (Annex 9).

It can be noticed in the picture that the participants have also mentioned actors who did not participate in the workshop, and yet their importance and therefore inclusion in the network of actors for future such program activities were noted.

Looking into the future

The pilot of Digital Green's extension approach with CSISA was viewed positively in this short-duration pilot. Digital Green's own approach was strengthened in better understanding mechanisms to involve research and knowledge partners, such as CSISA. The gap analysis for identifying recommended technologies for a particular village provided a mechanism for focusing the work of its partners. Existing farming community practices could be strengthened through such technical assistance. The element of making a resource person from the CSISA hub available to answer the questions raised by the farmers immediately after a dissemination activity also added a new dimension to the extension approach. It also posed a challenge as to how the availability of such a person could always be made. Because no hub is available in every corner of the state, there is a need to think about such provisions of possible alternative linkages in different strategic locations in future endeavors.

The partnership was found complementary and positive. Trust among the partners was built. Concerned partners recognized each other's comparative advantage and emphasized the need to strengthen it further. It was clearly evident that all parties would benefit from others getting stronger. As the roles are very defined and distinct, there is no real conflict among the partners. Opportunities are mentioned and they have the potential to guide the partnership into the future.

The partners and invited actors in the workshop indicated potential for expanding the partners in Bihar, Odisha, and other states and beyond India. There is scope in CSISA II and in other initiatives such as the CRS-led project in Bihar and IRRI-led STRASA project. Other international agencies active in the field of agriculture could help expand such opportunities. A regional knowledge bank inclusive of all types of agricultural enterprises could facilitate and ensure the access to knowledge required for such broad-based partnership. There is a need to explore an appropriate framework to move the process forward.

Bihar Rural Livelihoods Program (JEEViKA)

The objective of the Bihar Rural Livelihoods Program (BRLP) is to enhance the socioeconomic empowerment of the rural poor in Bihar. This objective could be accomplished by improving rural livelihoods and enhancing economic empowerment through developing organizations that enable them to access and better negotiate services. These could play a catalytic role in promoting the development of microfinance and agribusiness. More details of the program are available at http://brlp.in/index.php. JEEViKA is funded by the World Bank and has Digital Green as its extension partner. DG has just launched a major program with JEEViKA and links to CSISA, etc., offer scope for scaling out CSISA technologies.

Below are two possibilities for the Digital Green–JEEViKA partnership to link with the CSISA, STRASA, and potentially the IRRI-CRS project.

Possibility 1
- JEEViKA has a potential of reaching 4,000 villages and about 600,000 poor families in Bihar.
- JEEViKA is modeled with five basic objectives: skill building, food security, productivity enhancement and extension services, income generation, and fair trade.

- JEEViKA draws inputs from various public, private, government, and nongovernment organizations such as the State Agriculture Department, ICAR, NGOs, research organizations, private organizations and companies, universities and KVKs, and CGIAR institutes (IRRI, CIMMYT, ILRI, IFPRI, ICRISAT).
- With projects such as CSISA and STRASA contributing to this system directly or through their partners, there is a possibility to feed into the JEEViKA model at the research and capacity-building levels.

- Digital Green, within the mode of an MoU/LoA, could act as an intermediary.

Possibility 2

IRRI/CSISA could develop a Knowledge Bank from Bihar from which the organization (JEEViKA) could draw inputs to develop localized video content to disseminate among the farming communities with whom it works (see Fig. 1).
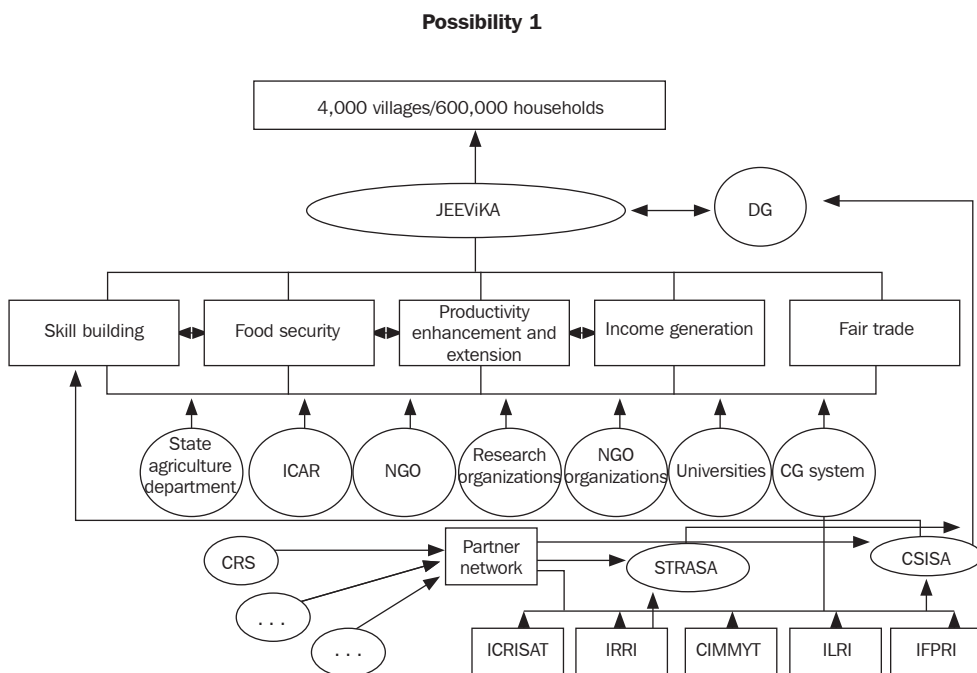
Possibility 1

Fig. 1. Future possibilities in Bihar: linking with ongoing government initiatives and knowledge management.
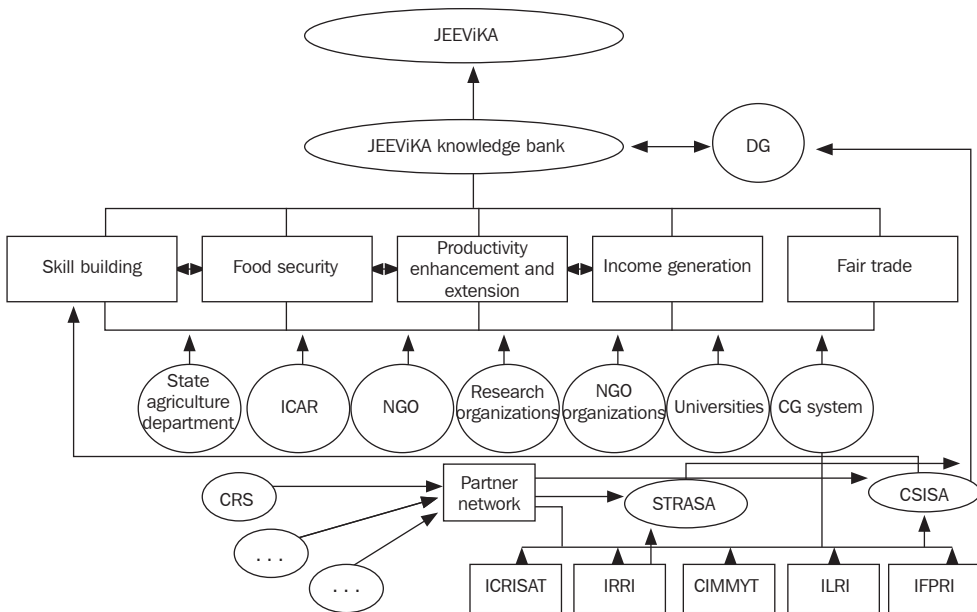
Developing a response framework for farmer queries concerning CSISA technologies

When a new refined technology enters a system, farmers witness the process through a demonstration, farmer field trial, training of trainers, or a video. This process has three possible outcomes: the farmer rejects the technology, the farmer is interested, or the farmer accepts the technology. If a general acceptance of the technology is seen, the technology penetrates into the farmers' knowledge and goes into adoption. If an interest in the technology is generated, the role of the HAC/extension agents comes in to build the capacity of farmers and facilitate adoption. This process could also highlight the problems and flaws in a technology, thereby leading to further refinement and modification and new technologies and variants entering the system. The farmers' feedback would also feed directly into the system, and penetrate into an organization's knowledge bank, thereby creating a response framework for CSISA technologies with the hub and the HAC at the center. Sustainability of adoption would depend on factors such as continuing interest, capacity-building component, availability of inputs for the technology, expertise on the technology, and market demand. This flow is represented diagrammatically in Figure 2.
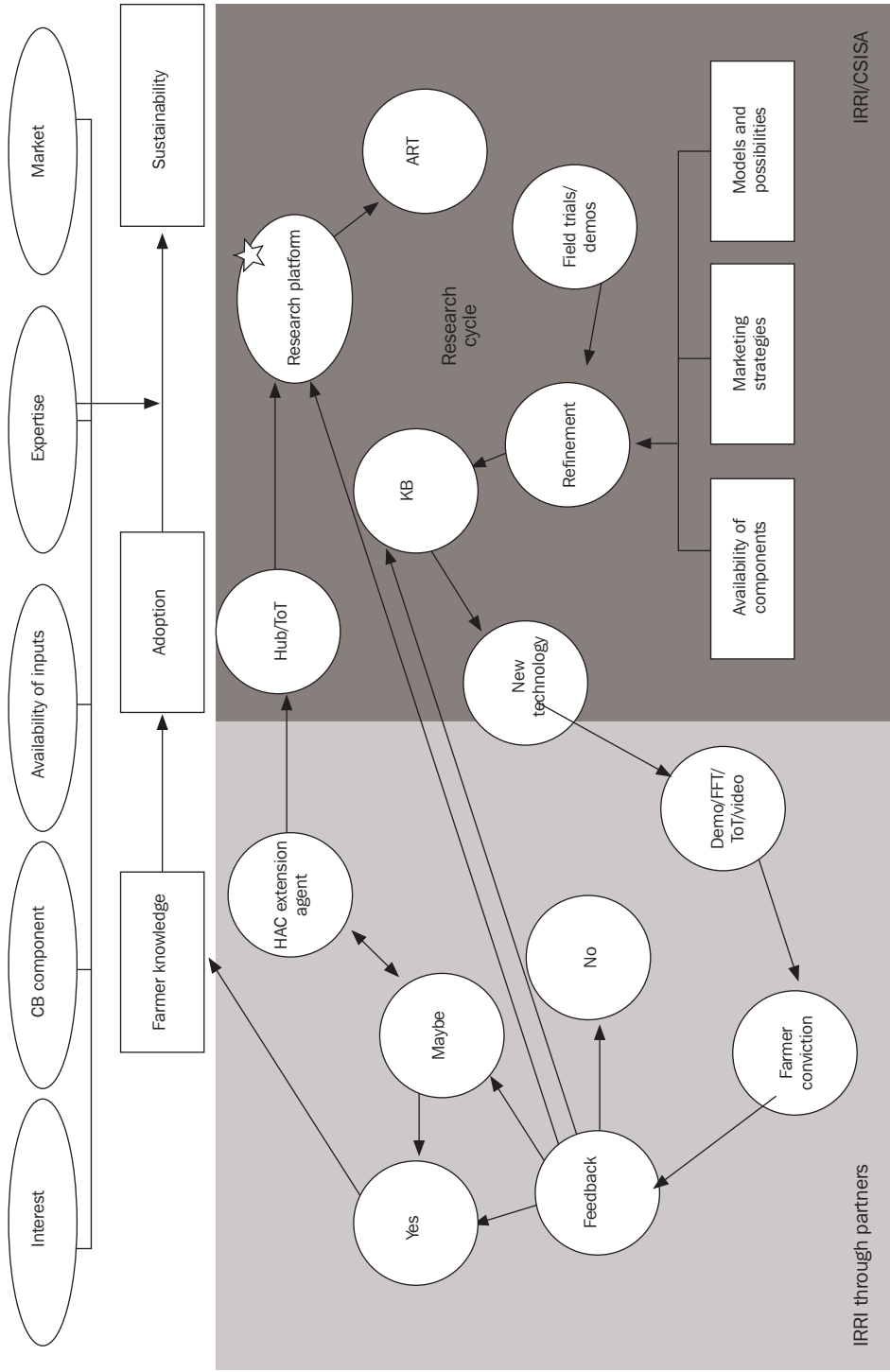
Fig. 2. Response framework to farmer queries: research, feedback, adoption, linkages, and sustainability.

Conclusions and recommendations

There seem to be a number of scenarios to consider as the pilot phase of CSISA and Digital Green's partnership concludes. During the review process, we did discuss expanding the types of videos being used by the community groups. It was agreed that there was a place for the inclusion of specialized videos (e.g., a video on a specific technology developed by CSISA could enrich the extension approach).

A variant of a pilot could test how the model works with other knowledge providers (e.g., KVK, DoA, SAUs, CGIAR) in a new geography to conduct technology demonstrations and technical support to Digital Green and its extension system partners. This could integrate HAC into the approach and strengthen it further by involving other research, extension, and community partners as well.

We expect that this model partnership can be mainstreamed into existing and future CSISA hubs (CSISA II) in Bihar and Odisha to form part of a multiple pathway extension model. Other IRRI projects (e.g., STRASA and CRS-IRRI) and knowledge repositories could be linked to this platform to provide opportunities for greater dissemination, community feedback, and usage. The model could also be extended to other CSISA hubs outside India into other parts of South Asia (e.g., Bangladesh, Nepal, and Pakistan) and other IRRI locations around the world. This would require stronger coordination within IRRI. The findings of the pilot can also be a source of learning for expanding the Digital Green extension model and linking with other research institutions beyond IRRI. Case studies conducted by interns to look at what the new model means to the adoption process and what the cost analysis is in terms of profit margins to farmers both with and without intervention can assist this learning.

In such cases, Digital Green would need to deal with even a wider range of actors to access technology, collaboration in the field, and implementation of the program. It would need to include new partners (NGOs, KVKs), renew LoA with old partners, LoA with actors as a source of knowledge (IWMI, ILRI, ICAR, IFPRI, CIMMYT, universities, the private sector), and LoA with projects/programs (JEEViKA, ATMA) for accessing financial resources and the network. This would also require a consistent and unified knowledge repository, a knowledge bank, through which Digital Green would be able to respond to the need of poor people across livelihood sources (farm, nonfarm, market, organizational, policy, etc.). Digital Green also plans to strengthen its technical advisory committee by involving members from these research and knowledge agencies that could actively support the video development process and respond to queries from target communities with expert advice and support.

Annexes

Annex 1

Cereal Systems Initiative for South Asia (CSISA)

The Cereal Systems Initiative for South Asia (CSISA) is a 10-year project to provide an overall strategy and umbrella for contributing new science and technologies to short- and long-term cereal production growth in South Asia's most important grain baskets. CSISA is mandated to enhance farm productivity and increase incomes of resource-poor farm families in South Asia through the accelerated development and inclusive deployment of new varieties, sustainable management technologies, partnerships, and policies.

CSISA was established in 2009 with funding from USAID and BMGF (Bill & Melinda Gates Foundation). It is being implemented by the CGIAR institutions of IRRI, CIMMYT, IFPRI, and ILRI and it works through long-term partnerships with NARES, private-sector organizations, and NGOs. CSISA has a presence across the Indo-Gangetic Plains in India, Pakistan, Nepal, and Bangladesh and is headquartered in India.

By year 10, CSISA is expected to help 4 million farmers achieve a yield increase of at least 0.5 t/ha on 5 million ha and an additional 2 million farmers achieve a yield increase of at least 1.0 t/ha on 2.5 million ha. Nitrogen- and water-use efficiency would increase by 30% compared with current levels. At least 5 million tons of additional grain will be produced annually, with an additional economic grain value of at least $1.5 billion per year and substantial other savings in energy and other production costs. Fodder availability in livestock-dependent households will be increased. Six million poor rural households will have increased their annual household income by at least $350 per year. Affordable prices of staple cereals will benefit hundreds of millions of rural and urban landless poor. To achieve this, CSISA has developed a series of eight objectives.

CSISA objectives

1. Widespread delivery and adaptation of production and postharvest technologies to increase cereal production and raise incomes.
2. Crop and resource management practices for sustainable future cereal-based systems.
3. High-yielding, abiotic stress-tolerant, and disease- and insect-resistant rice varieties and hybrids for current and future cereal and mixed crop-livestock systems.
4. High-yielding, abiotic stress-tolerant, disease-resistant wheat varieties for current and future cereal and mixed crop-livestock systems.
5. High-yielding, heat-tolerant, and disease-resistant maize inbred lines and hybrids for current and future cereal and mixed crop-livestock systems.

6. Technology targeting and improved policies for inclusive agricultural growth.
7. Creating a new generation of scientists and professional agronomists for cereal systems research and management.
8. Project management, communication, and impact assessment.

Linkages

The fundamental field unit is called a "hub"—a location that serves farming households in the surrounding 7–8 districts. Each hub brings together a set of partners—private-sector companies (involved in agricultural inputs and services supply and marketing, processing facilities, equipment manufacturers), public-sector extension and district government development agencies, universities, water management associations, NGOs, and farmer groups with a substantial on-the-ground presence. CSISA now has more than 300 partners.

Model of extension

Hubs are primarily staffed by the hub manager—an agricultural scientist—and supported by two to three scientific extension agronomists and assistant research scientists. This core team is supported by field assistants, an accountant, and drivers.

Each hub is involved in several activities,[1] the major one being involvement in intensive adaptive research trials. Such trials are conducted in fields of large farmers, who are expected to allocate specific large tracts and are able to ignore the loss of crops, if the trials do not succeed. Generally, all resources (seed, agrochemicals, machines, and labor) are provided by the hub. Visiting farmers and other stakeholders are then taken to these trials for learning. It is expected that these farmers would educate their visitors about the trials and help spread the practices and recommendations. Additionally, the hub staff proactively share their contact numbers, so that any farmers implementing any such activity can ask any question, if they face unforeseen problems.

Annex 2

Digital Green

Digital Green is a nonprofit organization registered in both the United States and India, with headquarters in India. The Digital Green mission is to build and deploy information and communication technology to amplify the effectiveness of development efforts around the world. Digital Green has designed a system that uses technology within existing social networks. The unique components of the Digital Green approach include the following:

- Integration of technology into existing development efforts of civil society and public-sector partners, building local capacity to use new social and behavior change communication tools.
- Use of local social networks to connect intermediaries (local facilitators such as community mobilization agents or agricultural extension officers) in rural communities with content experts, program managers, and researchers at district levels ("hubs and spokes").

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[1]Each hub is involved in several activities such as stakeholder visits and meetings, partnership development and interaction, awareness programs and training (farmer visits, information sharing and problem solving, traveling seminars, farmer fairs, workshops, exhibitions, etc.), reporting, etc.

- A participatory process for the local production of short learning videos by and for farmers aimed at capturing and sharing the adoption of new or improved practices.
- The dissemination of videos within similar communities, involving facilitated discussion, training, and supervision, referred to as the Digital Green "human-mediated digital learning approach."
- A hardware and software technology platform to exchange data in areas with limited Internet and electrical grid connectivity.
- An iterative model to identify opportunities to better address the needs and interests of the community with Web-based analytical tools and interactive voice response (IVR) phone-based feedback channels.

These components foster community ownership and diffuse learning, building farmers' knowledge and practice of improved, sustainable agriculture and allied livelihood interventions. The approach has also enabled Digital Green to scale up rapidly in India.

Videos feature local farmers, speaking in their local language, about their personal experiences using selected agricultural techniques or behaviors. Examples include the use of improved seeds, new planting or harvesting techniques, the building of compost pits, natural pest control, the development of kitchen or homestead gardens, and other practices. Once videos are produced, they are then shown in villages by local intermediaries (or facilitators), who explain the techniques, answer questions, and encourage adoption of the behavior. The Digital Green approach also uses a "dialogue" or "reflective" process, rather than a traditional approach of outside "experts" telling clients what they should do. Videos highlight early adopters of innovation, who may also be seen as positive deviants in their community.

Although the videos provide excitement and a focal point, it is the engagement and empowerment of people and social dynamics that drive the model's success.

Enthusiasm over new technology and innovation in general and the thrill of appearing on video or seeing fellow community members on video motivate individuals to participate. The power of positive identification with peers is leveraged to minimize the distance between teacher and learner, and to maximize the adoption of the practices or behaviors being modeled. Figure 1 represents the components of the Digital Green system and the way in which these are sequenced.

Digital Green collects data associated with the videos, including their reach, the feedback of viewers, and the uptake of the featured practices. These data are aggregated and analyzed on near real-time analytics dashboards and maps on the Digital Green Web page. The dashboards are built upon a data management framework called Connect Online, Connect Offline (COCO), which was created by a team of engineers at Digital Green to be accessible by any Web-enabled device in areas that have limited or intermittent Internet connectivity. COCO provides a platform for sharing of videos produced and an opportunity to analyze data at the local level for decision-making regarding the production of subsequent videos, targeting of video distribution, and logistical planning. It also enhances accountability and measurement of impact.

There is evidence of the effectiveness of the Digital Green approach, validated by Digital Green's own monitoring and evaluation as well as by outside researchers, including the
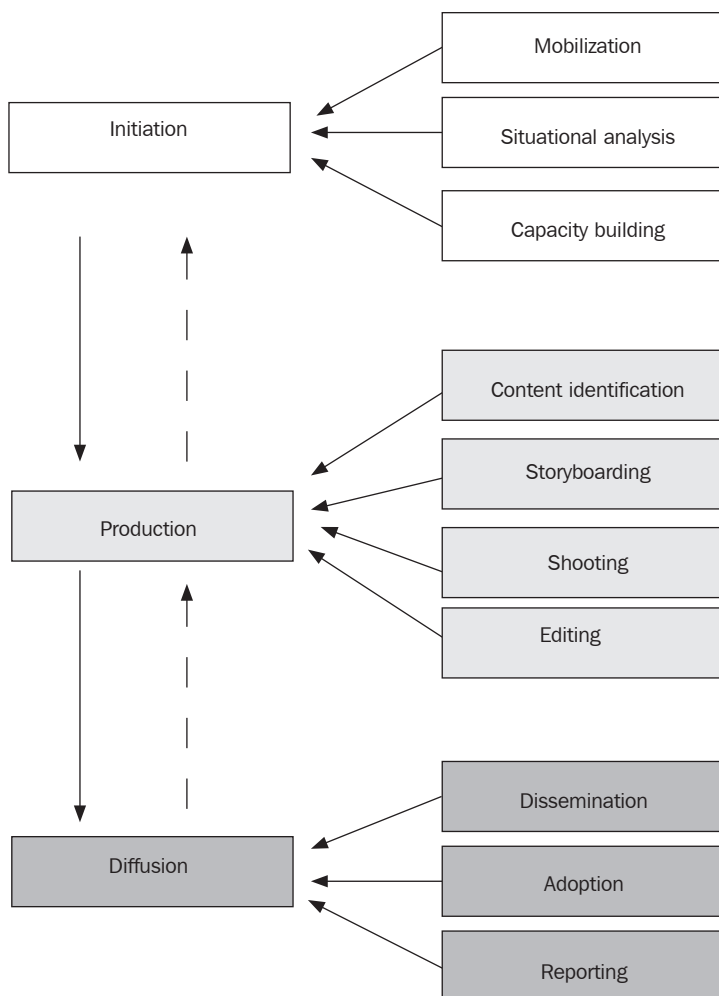
Fig. 1. Components of the Digital Green system.

University of California-Berkeley and Yale University. In a controlled evaluation, the Digital Green approach was found to increase the uptake of agricultural practices sevenfold and to improve the cost-effectiveness of a classic extension approach by a factor of ten. In March 2012, 46% of the 88,000 farmers who viewed screenings in the prior 2 months had adopted a new practice from the videos during that period. Of those farmers, 20% repeated the adoption of a practice from the videos that they had made at least 6 months prior. Preliminary assessments with two of Digital Green's partners, PRADAN and VARRAT, in the Indian state of Odisha, have shown cost per adoption rates lowered from $10–18, using typical agricultural extension approaches, to $3–4.

Funding for Digital Green has come predominantly from the Bill & Melinda Gates Foundation and the Indian government. Digital Green currently works in six Indian states. The government of India has also allocated funding to Digital Green to strengthen the National Rural Livelihood Mission, a high-profile poverty alleviation program of the Ministry of Rural Development.

Over the next 3.5 years, Digital Green will work across 10,000 villages, assisting an estimated 1 million farmers. Another new initiative is under way to introduce the Digital Green model in Ethiopia in partnership with the Ministry of Agriculture and three civil society organizations.

Digital Green partner selection process: partner due diligence

Digital Green uses a rigorous, due diligence procedure for identifying its partners based on three primary criteria: (1) scope of locally relevant domain expertise, (2) established level of scale in their existing extension operations, and (3) community-level trust and rapport. For the purpose of ensuring the quality of content, the first criterion of locally relevant domain expertise is of critical importance. Partners who have demonstrated experience in using a combination of externally sourced research as well as on-farm participatory research trials to determine the package of practices and technologies that they share in a particular geography as well as their cost-benefits, limitations, etc., are selected. Their partners typically have an existing schedule of interventions, which include field demonstrations, exposure visits, farmer field schools, and the like. The content initially produced is seeded with those practices and technologies that are shared across these extension approaches. In addition, the process of producing short video involves the modularization of complex practices and technologies into digestible forms. Consequently, they work to standardize the practices in a partner's knowledge banks (i.e., physical or virtual) as appropriate to the location-specific contexts of the communities that they work with. They also ensure that their partners have worked through the relevant linkages across a value chain (e.g., credit, inputs, markets, government schemes) that might be necessary for particular practices or technologies to have value. The practices are also sequenced to be able to provide the full value to those that adopt an entire package as well as to build interest among the community by showcasing those practices that provide tangible value in a short time duration first and showing those that might provide longer-term gains later.

Annex 3

LOA between CSISA and Digital Green for the pilot

29 September 2011

Rikin Gandhi
CEO, Digital Green Foundation
2342, Shattuck Avenue
#151, Berkeley, CA 94704 USA

IRRI Ref: DPPC2008-100/ DPPC2008-89

Dear Rikin,

Subject: Letter of Agreement on the collaborative project "Cereal Systems Initiative for South Asia (CSISA)"

The International Rice Research Institute (herein after referred to as "IRRI") is involved in a collaborative research funded by the Bill and Melinda Gates Foundation (BMGF) and the United States Agency for International Development (USAID) entitled *"Cereal Systems Initiative for South Asia (CSISA) Project".* In this regard, we would like to formalize our collaboration with the Digital Green Foundation (herein after referred to as "DG") *to improve the cost-effectiveness of CSISA's agricultural extension system and broaden the community's participation in the villages of Bihar, Uttar Pradesh, West Bengal and Orissa to ultimately increase the agronomic productivity and socioeconomic position of smallholder farmers in the area.*

Project description

The CSISA Project aims to improve cereal productivity and farm income in four countries in South Asia through innovative partnerships with the public and private sectors in key "hubs". Improved cultivars and hybrids of maize, rice and wheat will be developed, alongside policy analysis and advocacy, and capacity building at all level. As a first step in this collaboration, a pilot is proposed in **20 suitable villages of Jamui District or as appropriate in Bihar**

Implementation of the Project
        The project activities will be implemented by DG, in as per agreed work plan (annex 1) in line with the requirements of the CSISA mandate
        CSISA CEO, Mr. M.S. Rao/ nominee will be responsible for all CSISA activities in this collaboration though other CSISA scientists will be involved in an advisory capacity to DG.
        DG CEO, Mr. Rikin Gandhi/ nominee will be responsible for all DG activities in this collaboration.

It is agreed that DG will:
1. Develop a comprehensive technical work plan for delivery through its partner in consultation with CSISA staff and as per discussion held with DG Staff in New Delhi;

2. Build the capacity of DG partner and equip communities in the chosen 20 villages for implementation of its video extension model for accelerating delivery of the CA based technologies and practices
3. Prepare and submit a technical report at the end of the project and provide a funds utilization report to IRRI as per its format and requirement;
4. Disseminate CSISA technologies through the DG extension protocol;
5. DG shall use its analytics like COCO etc. for assessing the take up of its extension program in the 20 villages under DG partner and the adoption of the technologies;
6. "CSISA" to be mentioned as a partner on DG website (www.digitalgreen.org/) and CSISA will provide a link for DG on their website (http://csisaportal.org).

The CSISA Bihar hub will:
1. Build or help build the capacity of DG partner staff members, community video producers, and village facilitators on CSISA technologies and packages of practices;
2. Provide access to the communication materials from CSISA Knowledge Bank and other sources as appropriate for supporting the CA technology roll out;
3. IRRI will provide US$ 30,000 to DG for the purpose of implementing this project and the approved work plan. This will be charged to GRISP Program 6 (IRRI) and the CSISA project.

Reporting

As with other programs run under several objectives, DG will share qualitative progress made and any challenges faced in the pilot on monthly basis, which can then be incorporated in the monthly report prepared by CSISA for its stakeholders.

An interim financial report is required by December 2011 and a final report at the end of the pilot

Communications, Meetings, and Visits

CSISA and DG agree to be in regular communication with each other throughout the project period regarding the progress and in achieving the charitable objectives set forth in the proposal in the implementation of the Project that is likely to have a material impact on its ability to achieve the Project's objectives, including substitution of any key personnel or key partner in the Project. Both parties agree to be available for periodic meetings and phone calls to discuss the Project and to facilitate communications and visits by CSISA/ IRRI and its donors to sub-project sites being supported by the grant. DG agrees to monitor the on-going field activities of the project districts as and when necessary. CSISA project will make necessary travel arrangements for the same.

Funding

1. IRRI will transfer funds to DG for CSISA delivery research operations in the amount and payment schedule as in the approved work plan (annex 1).
2. All unspent funds will be returned to IRRI 60 days after project termination date

Intellectual Property Rights and Publications

DG agrees to make available to the public the results of the research emerging from the Project, or any reports or other publications regarding the Project funded by this grant (collectively, the "Materials"), and anticipates that the Materials will be published in a treatise, thesis, trade publication, or in any other format that is available for the interested public as soon as practical to maximize the benefits to developing world interests. Specifically, DG is expected to use good faith efforts and work in a collaborative fashion to facilitate broad dissemination and accessibility of the Materials in the developing world. Results of the collaborative activity will be published in accordance with standard academic practices.

All training materials, farm inputs and seeds used in the collaboration will be transferred using a standard Materials Transfer Agreement (MTA). DG in its own work shall assume full responsibility for adhering to all applicable laws and regulations and for complying with the government and regulatory approvals and consents pertinent to or required to cover its research activities including the quarantine/biosafety regulations and rules on the importation, transportation, or release of genetic Material.

All outcomes of the joint activities, including all intellectual property rights (IPR), shall be released on a Creative Commons Attribution, Noncommercial, ShareAlike (http://creativecommons.org/licenses/by-nc-sa/2.5/in/deed.en) license. As such, they shall remain publicly accessible and shall be available to the partners of collaborating institutions and to end-users.

Background IP will be available to all partners for the purpose of project.

Global Access Strategy

It is understood and acknowledged that the Project is supported by a grant of the Gates Foundation made to IRRI in furtherance of its charitable purposes and therefore, as a condition to making the subgrant, DG will, to the extent within reasonable control, conduct and manage its research, product development, technologies and innovations funded by this subgrant in a manner that enables the knowledge gained during the project to be promptly and broadly disseminated to the scientific community, subject to a limited delay to seek intellectual property protection if such protection would best facilitate the achievement of the Project's charitable objectives, and subsequent accessibility at a cost that is affordable so that it can be made available to the people most in need in the developing countries. This is the Global Access Strategy. In furtherance of this strategy, it is understood that DG anticipates making various commitments with respect to (a)

publication of results, (b) identification of background technologies and strategy to ensure access, (c) strategy to secure, manage, and allocate IP rights, and (d) anticipated potential post-project development, commercialization and sustainability strategies. Accordingly DG commits to engage in negotiations on IP rights (with respect to both background technology and project inventions, that are developed and/or created with finding from this subgrant as applicable), and anticipated related commercialization activities, in a manner that further supports the Global Access Strategy.

Indemnification

DG further agrees to indemnify the Foundation and IRRI for its acts and omissions and assumes responsibility for all liability for damages and injuries (including reasonable attorney's fees) which may arise or result from its actions or omissions or by those of any of its officers, agents, or employees.

General Conditions

DG has been selected to participate in this Project at IRRI's discretion. DG may not make any statement or otherwise imply to other donors, investors, media or the general public that it is a direct grantee of the Bill & Melinda Gates Foundation ("Foundation") and must clearly state that International Rice Research Institute ("IRRI") is the foundation's grantee and that DG is a subgrantee of IRRI, before making any press release or using the Foundation's and/or IRRI's name or logo, you agree to obtain prior approval from IRRI at least two (2) weeks before the desired announcement or publication date.

The terms and conditions for this DG-IRRI collaborative project shall be consistent with the terms and conditions of the agreement between IRRI and the Foundation, including but not limited to the following provisions:

1. No portion of the grant funds is earmarked for lobbying and that the grant funds will not be used to support political activity.
2. Any interest or other income generated by the grant funds, including currency conversion gains, must be applied to the purpose of the project.
3. In accordance with the U.S. Executive order and laws that prohibit the provision of resources and support to individuals and organizations associated with terrorism and the terrorist related lists promulgated by the U.S. Government, your institute will use reasonable efforts to ensure that you do not support or promote violence, terrorist activity or related training, or money laundering.

Workplan

Project workplan will be reviewed periodically and modified if necessary. Any changes shall be agreed in writing between DG and IRRI.

Page 4 of 5

Duration and modification

This Letter of Agreement is effective from the date of signature and will remain in force until April 30, 2012 unless sooner terminated by one of the parties by notifying the others in writing of its intention to end the agreement. In such case, the agreement will terminate 30 days from the date of such notification. This agreement may be further renewed upon mutual consent of the parties prior to the termination date.

If you find the above terms acceptable, please sign them send to us through e-mail or fax.

We look forward to a fruitful collaboration with your institution.

Yours sincerely,

CONFORME:

Mr. M.S. Rao
CEO, CSISA

Mr. Rikin Gandhi
CEO, Digital Green Foundation

Annex 1. Work plan

CSISA and DG are interested in piloting together the DG video extension model in Bihar. The pilot activity for DG will be with its existing partner. The objective is to develop a potential workable pathway for technologies being developed and demonstrated with the CSISA hub to be disseminated through the extension-partnership video model of DG. CSISA is interested in a pilot with DG for 6 months, and is looking to move into CSISA II with DG as a partner. The interest is in DG's entire extension process, not just making videos.

Pilot details in brief

Bank details would be submitted by DG.

These costs include entire costing for all components required by DG for the pilot and will include:

- An experienced DG person assigned full-time to Bihar to coordinate the pilot in its entirety
- DG standard operating procedures for building capacity for DG partner within the 20

Parameter	Decision
State	Bihar
Pilot district	Jamui and a suitable district
No. of villages	20
Process of technical validation	DG team
	DG partner's team
Cost per village	$1,000
Total cost	$30,000
Time frame	6 months
Period	October 2011 to April 2012

Disbursement	Fund source	Amount ($)
Initial startup	GRiSP Program 6	18,000 (60%)
By Dec 1, 2011	GRiSP Program 6	6,000 (20%)
By March 31, 2012*	CSISA	6,000 (20%)
Total		30,000 (100%)

*on submission of the final report

villages. This includes community awareness, training of village persons, and development of the program and analytics. Cost of establishing the program in 20 villages including hiring, training, and maintaining personnel from the local community.

- Cost of equipment (camera, projector, tripod, battery, solar panels, etc.).

Other additional costs will be jointly shared by DG and CSISA.

Nonfinancial

1. The pilot will be implemented by DG with its partner; DG will own and lead the pilot.
2. CSISA's role (hub team or otherwise) will be to provide information on the locally relevant prioritized technologies emanating from the hub. This will be done through training, field demonstration visits, and appropriate demonstrations with the DG partners' villages.
3. The CSISA hub team will validate only the technical component of the videos produced by the DG partner's community video producers on CSISA-specific technologies within 7 working days of receiving (i) the finalized storyboard and (ii) the video content.
4. Single contact points from the CSISA hub side and DG side would be designated for single channel interactions and feedback incorporation from DG and its partners' staff, community video producers, and village facilitators on technologies and videos.
5. CSISA will provide any videos it has developed on recommended technologies to augment DG's video extension program.
6. The CSISA team will also share publication details (books, pamphlets, videos, fact sheets, etc.)

for DG's and a DG partner's use in producing videos.

7. CSISA, at the start of the pilot and on a recurring basis, will train DG's partner's staff and DG staff on technical content in the selected geography or where appropriate.
8. CSISA will facilitate interactions between DG and farmers who are involved in CSISA's work.
9. CSISA will provide material support (machines, seeds, chemicals, etc.) to enable the staff of DG's partner and community intermediaries to conduct local demonstrations as requested by DG.
10. CSISA will inroduce its present and potential partners to this pilot program.
11. CSISA, around the fifth month of this six-month pilot, with the support of DG and its partner, will conduct a workshop to which its hub and present/potential partners are invited for cross-learning. DG and CSISA would also plan for future expansion during this workshop.

Commitments from DG (apart from details mentioned earlier).

1. DG can feature technologies and packages of practices in the videos that farmers have developed or innovated themselves as well as those promoted by DG's partner in the 20 villages.
2. DG can include relevant videos made by its effort from other projects.
3. DG will manage the support of its partner in making this pilot a success.
4. The geography selected for the pilot will have potential for implementation of CA technologies.
5. DG's partner will host demonstrations conducted and advised by CSISA hub staff that support the videos shown and provided an opportunity for localization.

6. DG will ensure technical validation with the CSISA Bihar hub team on/of CA technologies in content produced.
7. DG will share feedback from its partner's staff, community intermediaries, and farmers on CSISA technologies.
8. All videos made by input using CSISA support will include the logo of CSISA and DG. Later on, contact numbers of the hub staff can be shared by DG's partners' community resource persons with farmers in interactions.
9. DG will agree to host present and potential CSISA partners on dates decided by mutual consultations and convenience for awareness generation and training. This would happen only after 3 months of the pilot.
10. All unedited content will be shared with the CSISA PMU.

Monitoring and evaluation of pilot

The current analytics of DG for monitoring and evaluating its extension program with its partners will be used to evaluate progress within 6 months, and the CSISA PMU would independently monitor the outputs/outcomes of the pilot in planned visits. In addition, there will be a facilitated workshop of the CSISA hub, DG's partner, and DG on progress achieved through the pilot. The parameters chosen as indicators for success are

1. Videos made using CSISA support
2. Screening conducted and responses/feedback
3. Adoptions by farmers
4. Visits by present/potential partners to share the work being done
5. Training activities attended by DG's partner and DG

Expected outcomes at the end of the pilot are

1. Development of a protocol for engagement beyond the pilot between DG and CSISA
2. Identification of learning done
3. DG partner's capacity and how work is done
4. Certain number of interventions extended to selected villages in selected districts and farmer adoption

Annex 4

ASA's livelihood model

At ASA, having realized that significant opportunities for the enhancement of livelihoods exist through the restoration and management of available natural resources, a strategy was developed with the following hypothesis. With more than 70% of the rural population dependent on agriculture, directly or indirectly, the development of land, water, and vegetation, the fundamental resources, holds the key for improvement in livelihood. With the investment in land, water, and vegetation, intensification and diversification of agriculture with a steady flow of institutional credit are perhaps the mantra to increase rural GDP. In this model of livelihood, local institutional development for management and sustainability is instrumental in optimizing the investment made in the above factors. Special focus has been placed on the poor and women in this model through community-based organizations (CBOs).

Annex 5

Crop calendar

Videos to be made	Completion date
Super Bag seed	before 15 Feb.
Benefits of timely sowing in wheat	before 15 Feb.
Potato-maize intercropping	before 15 Feb.
Surface seeding of Masoor	10-15 Feb.
Seed treatment of Masoor	10-15 Feb.
ZT maize jack planter	25 Feb-5 March
ZT maize using hand-held planter	25 Feb-5 March
ZT spring maize	25 Feb-5 March
Maize + vegetables intercropping	1-30 March
Onion + okra intercropping	1-15 March
Improved variety of green gram	1-15 March
ZT green gram	1-15 March
Seed treatment of green gram	1-15 March

Annex 6

Digital Green feedback and dissemination status of videos on CSISA technology: progress report as of 1 April 2012

Title	Link in YouTube	District	Status
Super Bag for grain storage, in Hindi, CSISA ASA Bihar	www.digitalgreen.org/analytics/video/?id=10000000020522	Munger	Approved
Weeding in wheat using conoweeder, in Hindi, ASA Bihar	www.digitalgreen.org/analytics/video/?id=10000000020523	Munger	Approved
Super Bag for Community Seed Storage, in Hindi, CSISA ASA Bihar	www.digitalgreen.org/analytics/video/?id=10000000020549	Munger	Rejected
Intercropping of maize with potato, in Hindi, CSISA ASA Bihar		Munger	Pending approval
Benefits of timely sowing in wheat, in Hindi, CSISA ASA Bihar		Munger	Pending approval
Seed treatment of green gram, in Hindi, CSISA ASA Bihar		Munger	Sent to CSISA
Seed treatment of lentil, in Hindi, CSISA ASA Bihar		Munger	Sent to CSISA
Irrigation management in wheat, in Hindi, CSISA ASA Bihar		Munger	Not sent
Super Bag for grain storage, in Santali, CSISA ASA Bihar	www.digitalgreen.org/analytics/video/?id=10000000020518	Jamui	Approved
Super Bag for community seed storage, in Santali (CSISA ASA Bihar)	www.digitalgreen.org/analytics/video/?id=10000000020517	Jamui	Approved
Weeding in wheat using conoweeder, in Santali, CSISA ASA Bihar	www.digitalgreen.org/analytics/video/?id=10000000020519	Jamui	Rejected
Seed treatment of green gram, in Santali, CSISA ASA Bihar		Jamui	Not sent
Irrigation management in wheat, in Santali, CSISA ASA Bihar		Jamui	Not sent

Impact of videos of CSISA-promoted technology in Jamui District

The videos of Digital Green–CSISA play an important role in bridging the gap between traditional agricultural practices and improved agricultural practices in Jamui, Bihar. Better agricultural practices scale up more effectively after the showing of videos. Adoption of these videos is higher as these are produced in the local Santali language and the farmers can identify with the local heroes featured in the movies. Farmers in Chakai, Jamui, usually cultivate paddy and some maize in the monsoon season but now they are cultivating wheat, cereals, and vegetables after seeing the DG-CSISA videos. ASA's professional extension officers can't reach out to each and every farmer to share their message and impart training. It is much easier and more efficient to convey the same through Digital Green videos.

Villagers of Karmakola stated that "Digital Green videos are helpful in increasing our awareness on improved agricultural practices. We are using the practices that we have learned in our fields and are realizing improvements in production." The videos serve as a sort of exposure visit to farmers to see other farmers' fields without the cost of travel and time to do so. The videos help farmers gain confidence in trying a new practice or technology as they are able to see, on video, a farmer with similar socioeconomic and agroecological constraints as themselves applying and benefiting from the featured practice or technology. There is no electricity in Chakai block and most of the individuals in the community have had very limited access to any moving pictures in the past, so the videos also introduce novelty and inspire interest. Individuals mentioned that retention of information is greater when watching a video than when reading a static poster or listening to a radio program.

The community expressed a keen interest in adopting the practices that they observed. Their level of questioning and interest suggests that they are highly engaged in the learning process. A summary of the questions that the community expressed while viewing videos on CSISA-specific topics follows.

Grain storage in Super Bag and community seed storage

- Can we store seeds other than paddy?
- Where can we get a Super Bag?
- How can we afford it?
- For how many days can seeds be stored?
- What are the benefits of storing grains in a Super Bag?
- What processes and precautions should be followed during storing?

Community seed storage using a Super Bag Unique viewers who raised questions were 40.6%.

Percentage (out of total viewers)	Out of 57 queries, questions asked in each group	Questions raised
22	13	How much grain can be stored in a Super Bag? Can other seeds also be stored? For how many days can seed be stored? Is it available in different sizes?
17.5	10	What are the benefits of using a Super Bag? What is the advantage of a Super Bag rather than a normal bag?
21	12	How should it be kept after storage? What precautions should be taken during storage?
17.5	10	Where can we get a Super Bag? Is it available in the market?
15.7	9	What is the cost of a Super Bag?
3.5	2	Can it be opened frequently? What will happen if the bag is opened more than once?
2	1	Do we have to add any insecticide and pesticide?

Grain storage in a Super Bag

Unique viewers who raised questions were 35.1%.

During the screening of videos pertaining to the Super Bag, farmers expressed questions such as "Where can we purchase the bags?" and "What is the cost of the bags?" This suggests their intent to use them. Perhaps samples of the Super Bags could be provided free of cost to better assess and aggregate demand.

Percentage (out of total viewers)	Out of 47 queries, questions asked in each group	Questions raised
23.4	11	How long can grain be stored in the bag? For how many days can grain be stored efficiently?
25.5	12	What is the cost of a Super Bag?
21.3	10	Where can we get the Super Bag?
23.4	11	Can the bag be opened frequently? Can it be reused and, if yes, then how many times?
6.4	3	What are the benefits of using a Super Bag?

Weeding in wheat by using a conoweeder

- How many times should weeding be done?
- What should be the interval between each weeding?
- What are the benefits of doing weeding?

Impact of videos of CSISA-promoted technology in Munger

By disseminating videos, improved agricultural practices can be implemented. As these videos are in Angika (the local language), their adoption is higher and due to familiarity with the language, people are participating with greater enthusiasm in

the videos. Mainly cereal (wheat, maize), pulses (lentil, gram, pea), vegetables, and leguminous crops are cultivated in the rabi season and in kharif paddy, maize, and vegetables are produced through traditional processes but, seeing new technologies disseminated through videos, the adoption and awareness of new processes and technologies such as timely irrigation in maize, use of a conoweeder, storage of grain in a Super Bag, and storage of seed in a Super Bag are much higher. It is not possible for the professionals to reach each and every farmer and forward their messages through training and visits. This audiovisual tool has much greater impact and is popular in the villages. Moreover, the villagers appeared fascinated and extremely curious. Current farmers are eager to become a local hero by being in a video shot and produced on the farm.

According to the people of Amaiya Village, "DG video is helpful as it helps to disseminate and teach new technologies in a faster and more efficient way. Videos alone meet all the needs for adopting any practice in the field. We are using them in our fields and benefiting from them to enhance our production." Exposure visits in different areas also help farmers to use different practices and technologies successfully.

Some questions asked by the farmers on different videos that are shown in the villages follow.

Grain storage in a Super Bag and community seed storage
- Can we store seeds other than paddy?
- Where can we get a Super Bag?
- What is the difference between normal polythene and Super Bag polythene?
- How many days can seeds be stored efficiently?

- Is any pesticide required to use a Super Bag for storage?

In the screening of the conoweeder, questions arise such as "How many times will it be used?" and "Is it possible to do weeding in maize and in any crop in line sowing?" This shows the farmers' motivation to adopt these techniques.

Questions raised by farmers to the CSISA team during field visit
It was really motivating to listen to some of the questions raised by farmers during the recent visit of the CSISA and Digital Green team (Dr. Sudhir Singh, Poornima Ravi Shankar, and Digital Green's team in Munger) in the field of Munger. This shows farmers' willingness to adopt new technologies and practices. Some of the questions raised follow:
- What measures need to be taken for prevention of termites?
- What package of practices and crops should be selected for mixed cropping?
- Where can we get the correct insecticide and pesticide for the remedial measures to be followed in the field as the shop usually misguides us?
- What are the optimum and recommended doses of seed and fertilizer required for wheat and their time of application?
- Where and how can we test the soil and which is the best high-yielding variety seed to be used for various crops?

Super Bag for grain storage
Some 20% of the farmers raised questions pertaining to this video.

Percentage (out of total viewers)	Out of 83 queries, questions asked in each group	Questions raised
12.0	10	How is the Super Bag different from a regular polythene bag?
25.3	21	From where can we get the Super Bag in the market?
24.1	20	What is the cost of the Super Bag? What different sizes of Super Bag are available?
26.5	22	What other grains can be stored in a Super Bag? What is the duration of its safe storage? Is insecticide-pesticide application required in the Super Bag?
10.4	10	What precautions and processes should be followed during storage?

Annex 7

Framework of lessons learned: CSISA-DG partnership (20-26 March 2012)

Objective: To learn lessons from the ongoing partnership activities of CSISA and DG in Bihar and use the lessons in the next round of partnership activities for the CSISA project and for partners within their respective organizations.

Partners put forward the following agenda for the assessment:

a) General
- Report on progress, documentation
- Objectives and mission of the partners
- Partnership scope, need, and status within the framework of the project
- Review of learning of the partnership to date and future directions (DG-CSISA, DG-other DG partners, DG-CSISA-JEEViKA, DG-CSISA II)
- What worked and what did not work, what is the experience so far, and where are the bottlenecks?

b) Within CSISA
- The partnership development process
- Discussion on next critical partnerships to develop

- Where is CSISA going in terms of taking forward partnership issues?

c) Within DG
- How does partnership experience with CSISA fit with DG's own program? DG wants partners to integrate their own program. What would be linked to a new agreement?
- Clearly defining what DG needs from CSISA that matches IRRI objective to reach many farmers.
- Is there a pathway for DG program to be benefited from IRRI-CSISA technical delivery? What would be the nature of partnership?
- The challenge: the next phase of scaling-up with DG.
- DG's interest in DG-CSISA-JEEViKA partnership, especially to assess agricultural technologies/practices (in 125 villages?).

d) CSISA-DG partnership:
- Review partnerships—implications/benefits for CSISA, DG, DG partners
- DG and CSISA—review and understanding of what equates to win-win for CSISA and DG
- IRRI-CSISA-DG partnership—learning and experiences into the next phase of DG's work to scale with NRLM in Bihar and Odisha—IRRAS and CSISA II, etc.; possibilities to be explored

e) Future partnerships

CRS in terms of progress in that project. The following steps were used to assess the progress/status of the partnerships with all concerned partners—farmers, CSISA-PMU, CSISA field team, DG, DG-partners, and others. The inquiry process was conducted at a variety of levels: one-to-one meeting, partner meeting, farmer meeting, and a mini-workshop with all concerned.

Steps	Objective	Participants	Output	Tools
1. Deciding on assessment targets	• To prepare participants for discussion • To identify issues that are of concern for assessment by the partner	Partner team(s)	Assessment issues (with farmers, field staff, other partners, mini-workshop as mentioned below)	Card sorting for feedback, flip chart, whiteboard
2. Assessing outcome of partnership for farmers	To understand early evidence of impact	Partners with associated farmers	Farmer reflection on activities	Focus group discussion (what did farmers like, most significant changes taking place because of interventions)
3. Understand partnership progress over time	To understand the pace of quantitative and qualitative progress of partnership	Partner team	A clear set of steps/benchmarks	Timeline analysis
4. Assessment of extent of partnership	Stock taking/situation analysis	Partner team	Status report to date	(1) Network diagram of partners; (2) documentation of detailed partnership progress
5. Assessment of benefits or challenges of partnership	To identify the advantages and challenges of partnership	Partner leaders and teams	A list of benefits/advantages and challenges and their causes, with examples	SWOT analysis
6. Assessing organizational/institutional impact	To assess the significance of the partnership for organizational and institutional impact for a partner	Partner leaders and the teams	List of significant organizational and institutional changes and unintended benefit of partnership	Listing of organizational and institutional elements of the partnership in terms of impact; use of flow diagram to reflect institutional impact
7. Networking, communication, and dissemination	To identify the issues of linking with other actors to complement in the innovation system for future	Partner leaders, teams, and all together in mini-workshop	Future issues: what next with or without the project?	Case examples and learning from reflections
8. Feedback, suggestions, and recommendations	To help formulate suggestions and recommendations of partners	Plenary, mini-workshop		Presentations and conclusions

Steps and tools for the interaction with partners

A mini-workshop was conducted at the end of one-to-one discussions, meetings, and field visits for learning lessons collectively. This workshop served to share learning and explore strategies for extending the CSISA and Digital Green partnership with internal and external stakeholders.

Outline: Mini-Workshop 25 March 2012, Patna, Bihar

Schedule for the mini-workshop
25 March 2012, Nalanda Hall, Hotel Maurya, Patna

From	To	Activities	Presenters
9:00	9:30	Registration	
9:30	9:45	Introductions	
9:45	10:00	Welcome, briefing on the program, expectations from the meeting	A. Salahuddin
10:00	10:15	Introduction to CSISA	R.K. Mallik
10:15	10:30	Introduction to DG	R. Gandhi/A. Upadhyay
10:30	11:00	The CSISA-DG partnership	N. Magor/R. Gandhi
11:00	11:15	Tea	Hotel
11:15	11:30	Farmers' feedback from pilot villages	Chandra Shekhar
11:30	1:30	Present and potential partners (in alphabetical order) (Template)	All attending organizations
1:00	1:30	Lunch	
1:30	2:30	Each organization sketches and presents a partnership map for activities in agriculture	All attending organizations
2:30	3:00	Sketch the common partnership map	CSISA
3:00	4:00	Plenary discussions regarding future activities	Tea in between
4:00	4:30	Feedback	
	5:00	Pack, pay, and leave	

Field Visit Review Schedule

Date	Day	From	To	Duration	Team	Details	Stay at
19 Mar	Mon	Manila	Delhi		N, S	Arrival Delhi	Delhi
20 Mar	Tues	Delhi		0930-1300	N, S	Meeting: CSISA PMU, MS Rao, ML Jat	Delhi
				1430-1630	N, S, A, P	Meeting: DG	
21 Mar	Wed	Delhi		Morning	N, S	Meeting: IRRI-ICAR	Patna
				Afternoon	All	CSISA office inauguration	
22 Mar	Thur	Delhi	Patna	0630-0815	N, S, A, P	Travel to Patna	Deogarh
		Patna	Chakai	0830-1300	N, S, A, P	Travel to Chakai	
		Patna	Chakai	1300-1900	N, S, A, P, DG	Meet with DG-ASA Chakai team, visit village, witness dissemination	
		Chakai	Deogarh	1900-2000	N, S, A, P	Travel to Deogarh for stay	
23 Mar	Fri	Deogarh	Munger	0600-1600	N, S, A, P, Su, DG	Travel to Munger (Dist.), meet Munger team, visit village, Sudhir meets us in Munger	Barauni
		Munger	Barauni	1600-2000	N, S, A, P, Su	Travel to Barauni for stay	
24 Mar	Sat	Barauni		0830-0930	N, S, A, P, Su	Discussions with hub staff at hub/hotel	Patna
		Barauni	Patna	0930-1330	N, S, A, P	Travel to Patna	
			Patna	1400-1630	N, S, A, P	Meet with CRS	
25 Mar	Sun	Patna		0900-1400	N, S, A, P, Su	Mini-workshop and one-to-one discussion with partners (DG, CSISA, CRS, JEEViKA, AKRSP) at Hotel Maurya, Patna	Delhi
				1500-1900	N, S, A, P, Su	One-on-one meeting with partners at Hotel Maurya, Patna	
		Patna	Delhi	2015-2130	N, S, A, P	Arrive Delhi	
26 Mar	Mon	Delhi		0930-1300	All	Internal discussions and synthesis at CSISA office	
		Delhi	Manila	.....	N, S	Tentative departure for Philippines	

N = Noel Magor, S = Ahmed Salahuddin, A = Aanand Kumar, P = Poornima Ravi Shankar, Su = Sudhir Singh, DG = Digital Green

Annex 8

List of participants of mini-workshop

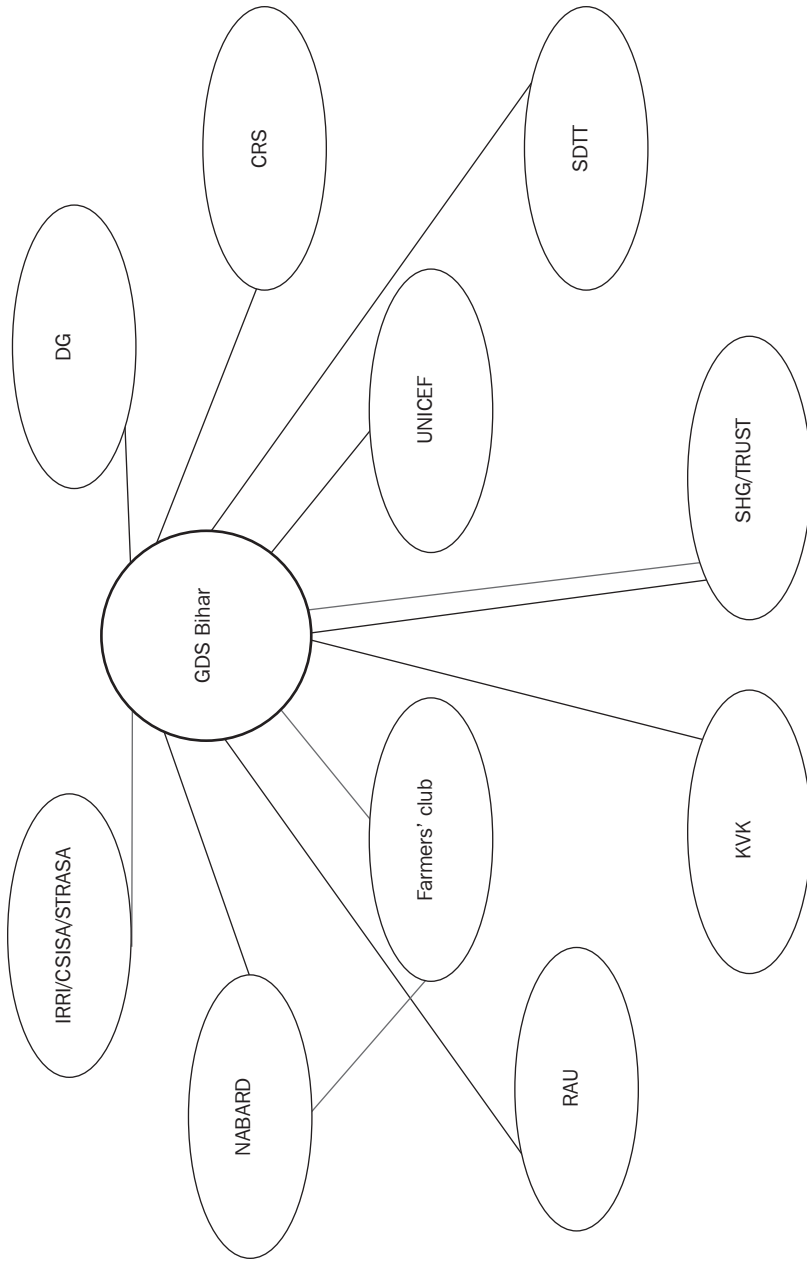| Name	Designation	Organization	Contact No.	Email
Chandra Shekhar	Program manager	Digital Green	9771473347	shekhar@digitalgreen.org
Amrita Singh	Program manager	Digital Green	9771409789	amrita@digitalgreen.org
Dr. Luna Panda	Program coordinator	Pragati	9437375677	luna@pragatikoraput.org
Prabhakar Adhikari	Secretary	Pragati	9437025045	prabhakar@pragatikoraput.org
Avinash Upadhyay	Regional program coordinator	Digital Green	9437035225	avinash@digitalgreen.org
Rajibkumar Roul	Manager (agriculture and livelihoods)	Aga Khan Rural Support Program	9771476624	agribihar@akrspi.org
Naba Keher Mishra	Project manager	VARRAT	9338029905	varratccf2006@gmail.com
Rikin Gandhi	CEO	Digital Green	9650806532	rikin@digitalgreen.org
Manoj Singh	Project executive	Grameen Development Services	8603159811	manoj.singh@gds.org.in
Pramod Kumar Singh	S.M.S. (agronomy)	KVK Jamui	9661076380	pramod.1700@yahoo.com
Brajesh Kumar	Program coordinator	KVK Jamui	9931886021	brajeshkumar79@hotmail.com
Dr. K.M. Singh	Head, Division of Socioeconomy and Extension	ICAR-RCER	9431060157	m.krishna.singh@gmail.com
Dr. S.S. Singh	Principal scientist and head, crop research	ICAR-RCER	9473400125	sssinghpatna@yahoo.co.in
Dr. Sudhir Singh	Extension agronomist, Central Bihar hub	CSISA	9931939353	su.kumar@cgiar.org
Dr. Ahmad Salahuddin	Consultant	IRRI		ahmad.salahuddin48@gmail. com
Dr. Noel Magor	Program leader (Last-mile delivery) and head, Training Center	IRRI		n.magor@irri.org
Dr. Poornima Ravi Shankar	Knowledge management coordinator	CSISA	9716214152	p.shankar@irri.org
Aanand Kumar	Business model specialist	CSISA	9311307562	aanand.kumar@irri.org
Dr. R.K. Mallik	Hub manager, central Bihar hub	CSISA	9161319472	RK.Malik@cgiar.org

Annex 9

Extension network of different agencies that participated in the mini-workshop
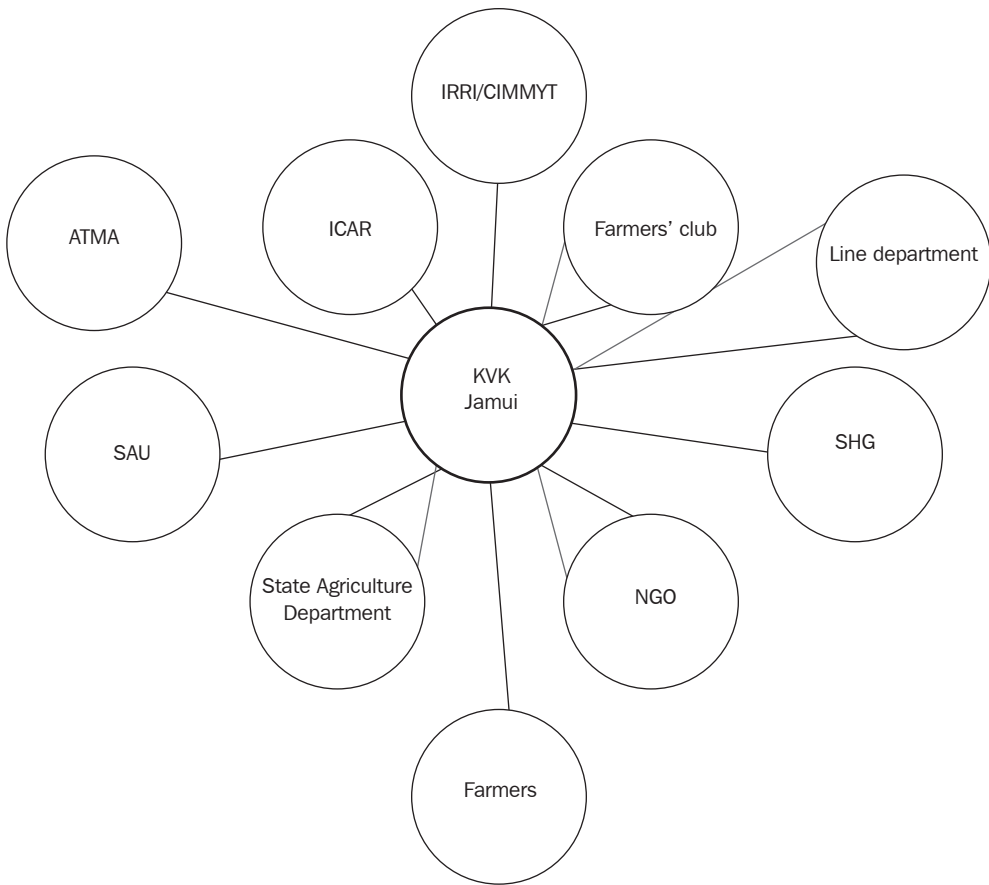
Partnership network—Pragati, Koraput, Odisha

Technical, financial flows
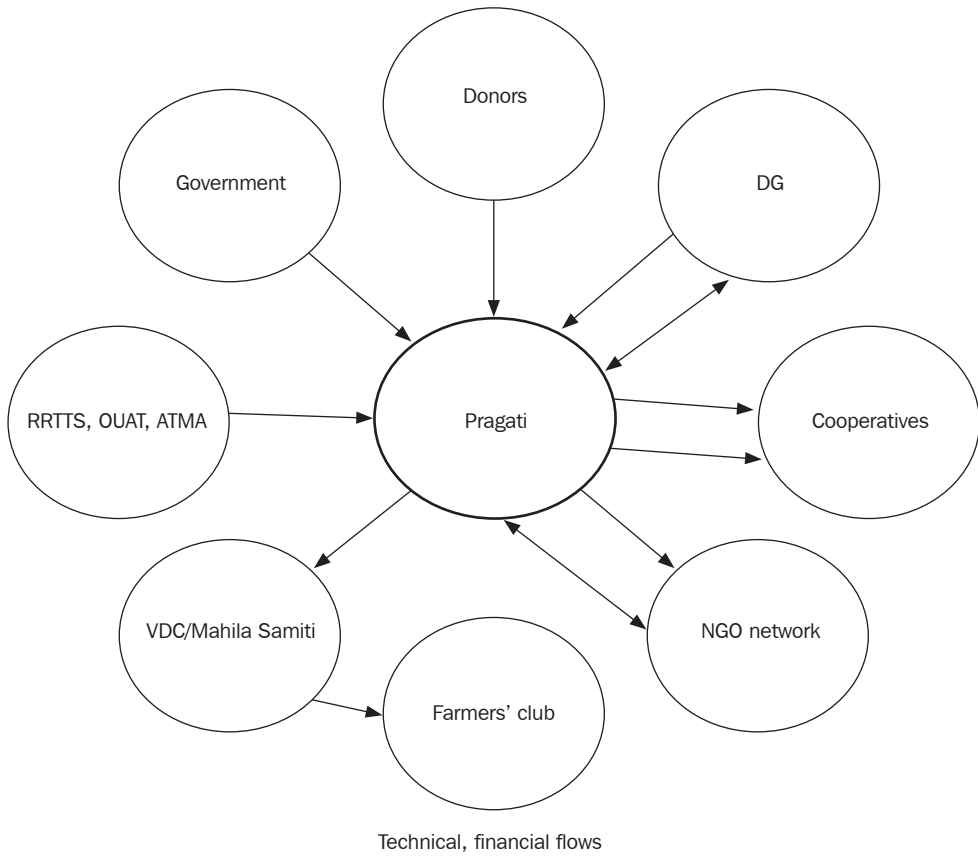
Partnership network—Grameen Development Services

CRS

SDTT

DG

UNICEF

GDS Bihar

SHG/TRUST

IRRI/CSISA/STRASA

Farmers' club

KVK

NABARD

RAU

Coordination, information transfer

Partnership network—KVK, Jamui

Coordination, information transfer

Partnership—VARRAT, Odisha

Financial, training, knowledge