

RESEARCH ARTICLE

Commercial channels vs free distribution and screening of agricultural learning videos: A case study from Benin and Mali

Gérard C. Zoundji^{1,*} , Florent Okry^{1,2}, Simplice D. Vodouhè³, Jeffery W. Bentley⁴ and Loes Witteveen^{5,6}

¹National University of Agriculture, Benin, 081 BP 7145 Cotonou, Benin, ²Access Agriculture, 04BP282 Cotonou, Benin, ³University of Abomey-Calavi, 01 B.P 526 Cotonou, Benin, ⁴Access Agriculture, Casilla 2695, Cochabamba, Bolivia, ⁵Communication, Participation & Social Ecological Learning, Van Hall Larenstein University of Applied Sciences, P.O. Box 9001, 6880 GB Velp, The Netherlands and ⁶Environmental Policy Group, Wageningen University, P.O. 8130, 6700 EW Wageningen, The Netherlands

*Corresponding author. Emails: gezoundji@yahoo.fr; zoundjig@postgrad.unu.edu

(Received 11 November 2019; revised 13 May 2020; accepted 27 May 2020)

Abstract

Farmers' access to reliable information is crucial to improving rural livelihoods, food security, and national economies in West Africa. This paper discusses the dynamics of accessing and using agricultural learning videos from commercial channels, vs project and non-project channels in Benin and Mali. Using combinations of different models to assess the effectiveness of agricultural extension programs, the findings showed that farmers were motivated to pay for videos and watch them by themselves, without facilitation. Farmers who watched the videos through project support have also continued to watch on their own if the videos are of interest to them. Nevertheless, farmers were less motivated in the learning process when they received the Digital Video Disc (DVD) free and without support to watch them. We also found that the distribution of learning videos through commercial channels reaches more serious users and increases farmers' self-determination for learning, and farmers are more motivated to provide feedback than viewers who receive DVDs for free or via project support, Non-Governmental Organizations (NGOs), or farmer organizations. Although buying a DVD is an individual action, they like to watch the videos in groups. After buying the DVD, about 43% of respondent borrowed DVD players and one person in five bought a DVD player to watch the videos. Efforts to promote improved technologies need to expand beyond the conventional focus on research and extension services. Support to agricultural technology dissemination must go beyond assistance to smallholder farmers and NGOs (practical implication). As the private sector has a role to play, both in making technologies available and in teaching farmers how to use them, their contribution would create space for innovation (theoretical implication). Our findings suggest that successful development intervention programs can be sell audiovisual material to farmers, who will use it proactively.

Keywords: Agricultural learning video; Food security; Development intervention programs

Introduction

Agricultural advisory services play an important role in promoting agricultural productivity and increasing food security. Research and development projects have tried various extension methods in Africa. The limitations of the Training and Visit method, in particular, have led to the search for methods that respond better to farmers' needs, especially toward participatory and group approaches (Davies, 2006). Participatory approaches, such as farmer-to-farmer extension and

farmer field schools, are now used to support information sharing and experimentation, so farmers can creatively adopt or adapt agricultural technologies (Kiptot and Franzel, 2014). However, scaling up is still a key challenge. Those farmers who participate in extension programs often share the information with few or no other rural people (Nathaniels, 2005), casting doubt on the ability of conventional extension to reach large audiences of farmers (Bentley, 2009).

Extension specialists must draw lessons from participatory methods and create tools that share information with the many people who need agricultural information (Defoer, 2002). Many farmers in developing countries never see extension service providers because of limitations in funding and because the public extension services can no longer meet the changing needs of farmers (Davis, 2008). Innovative learning tools, such as learning videos, can share information with large audiences and support agricultural extension in developing countries (Van Mele *et al.*, 2010). Various studies have shown that the learning video is a powerful extension tool when used by Non-Governmental Organizations (NGOs), farmer associations, extension workers, and others (Okry *et al.*, 2014). Videos and other visual learning strategies developed by Witteveen and Lie (2012) highlighted the power of images to enhance learning in ways not always possible with other written material. Video attracts rural people's curiosity and overcomes the hurdles of illiteracy, and most importantly, it sits comfortably with the narrative culture that prevails in most developing countries (Lie and Mandler, 2009). Nowadays, mass media are often used as communication channels in the process of learning, rural extension, and transformation. Mass media make use of video to help spread innovations. According to the Technical Centre for Agricultural and Rural Cooperation (Lie and Mandler, 2009), the findings from scientific research are often targeted at academic journals, which farmers hardly have access to, and even with access, the presentation of findings is too technical for them to understand and apply.

Many development organizations have invested in video production and farmers' access to it. The farmers' video viewing club was used to train farmers on cocoa-integrated crop and pest management in Ghana with the support of the World Cocoa Foundation (David and Asamoah, 2011). The International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT) supported the production of the "Fighting Striga" videos and facilitated their distribution through local organizations in Mali (Bentley *et al.*, 2017). In Benin, AfricaRice supported the production of the par-boiling rice video and its distribution via NGOs (Zossou *et al.*, 2012). With funding from United States Agency for International Development (USAID) and the Bill and Melinda Gates Foundation, the Cereal Systems Initiative for South Asia and International Maize and Wheat Improvement Centre (CIMMYT) supported the production of the "Save More, Grow More, Earn More" video in Bangladesh, with screening to farmers facilitated by NGOs (Bentley *et al.*, 2015). In southern Benin, learning videos on rice production practices were disseminated by giving Digital Video Disc (DVD) to farmers, video projection without facilitation, and video projection with facilitation (Davito *et al.*, 2017). The international non-profit organization Access Agriculture plays a crucial role in South-South sharing of farmer learning videos through innovative information and communication technologies (ICTs) and a growing network of global scaling and local video distribution partners (www.accessagriculture.org). So far, video distribution has often been based on project support (screening videos to farmers with facilitation by extension workers and giving DVDs to farmers for own screening later) and non-project support (independent organizations, media houses, and companies). According to Bentley *et al.* (2013), the distribution of videos needs to be improved, because simply leaving DVDs with rural advisory organizations does not always get videos to the grass-roots level. However, there is no strategic and tactical principle underlying sustainable, viable, and effective distribution mechanisms of videos, and the organizations and distributors often do as they see fit. This study, which assesses the effectiveness of learning video disseminated by commercial channels, by projects, and by independent organizations in Benin and Mali, constitutes an important step toward filling this knowledge gap. It thereby aligns with a major policy recommendation from the recent Food and Agriculture Organization of the United Nations (FAO) report "Inclusive Rural Communication Services" "to

enhance the communication and information capacity of rural family farmers and populations to amplify their voices in policies and enhance full participation in rural development processes” (FAO, 2017, p. 38).

Materials and Methods

Evaluation is a support for rational decision making, including assessment of past performance and informing current and future practices (Funnel and Rogers, 2011). In agricultural development, various methods have been used to evaluate extension programs. The sustainable livelihood approach was used to measure the effectiveness of farmer-to-farmer extension in the Andes (Hellin and Dixon, 2008). In Kenya, the farmer trainer approach was evaluated by looking at how well farmers had learned about and adopted the push–pull technology (Amudavi *et al.*, 2009). Some authors used human capacity, content, processes, outputs, inputs, and sustainability as criteria to assess the effectiveness of extension programs (Karuhanga *et al.*, 2012; Goe *et al.*, 2008).

In addition, relevance, effectiveness, efficiency, impact (changes in practices), and sustainability are the most commonly applied criteria, established by the Organization for Economic Cooperation and Development (OECD) for evaluating aid interventions (Chianca, 2008). In view of available models cited above, this study looked at the effectiveness of agricultural learning video dissemination in terms of: (i) information and knowledge sharing – the process and method through which the information is shared, i.e., the flow of knowledge, information, and materials among farmers. (ii) Satisfaction and relevance – the level of learning video viewers’ satisfaction and perception of relevance. Effective reaction of farmers toward the use of videos as learning tool, i.e., the fulfillment of certain prior expectations. (iii) Changes in practices (behavioral change) – applying the learning on farms. The main focus here is about what has been learned, i.e., alternative ways of doing farming activities based on videos. (iv) Sustainability of the dissemination method/channel – this is the feasibility for farmers, their organizations, NGOs, local institutions, private entrepreneurs, and companies to manage and support the approach without donor support (for example, the capacity to organize one’s own video learning, learning without extension worker’ facilitation, etc). Knowing the sustainable method of video dissemination would be of utmost importance to facilitate self-learning.

The choice of these criteria is also reinforced by the fact that evaluation of agricultural extension programs implies the systematic collection of information about the activities, characteristics, and outcomes of a program to make judgments about the program, improve its effectiveness, and/or inform decisions about future programming (Dart *et al.*, 1998). This study compares three different approaches for acquiring a learning video in light of the above. Although all of the videos discussed in this paper were produced by projects, there were various distribution strategies. This study focused only on the effectiveness of distribution. Videos are usually distributed with project support (funded by donors), but also by organizations without donor support to distribute videos (referred to as “independent organizations” in this paper). Videos can also be distributed by the private sector (Zoundji *et al.*, 2016). In this paper, each of the above three approaches is illustrated with a different case study.

Case 1: Commercial dissemination of learning videos (DVDs): DVDs were sold to farmers and other users. DVD buyers are supposed to organize their own video screenings without facilitation. DVD distribution was a stand-alone mechanism in this case (video alone).

Case 2: DVD dissemination by project support: organizations showed videos to farmers free of charge, using project support for the power generator, television set, DVD player, and travel expenses. In this case, an extension worker or a progressive farmer is available for facilitation and to respond to farmer’ questions after watching the videos. After video screening with project support, farmers are supposed to continue watching videos (just the video or the video as a supplement to interpersonal interaction).

Table 1. Overview of research activities

Case	DVD	Period	Method to gauge farmer response	Respondents
Commercial dissemination of DVD	<i>Improving vegetable production</i>	August to December 2015	Telephone survey	426 viewers
Commercial dissemination of DVD	<i>Improving vegetable production</i>	August to December 2015	Semi-structured interviews and field visits	103 viewers
DVD dissemination by project support	<i>Fighting Striga</i>	25 August to 12 September 2014	Semi-structured interviews and field visits	154 viewers
DVD dissemination by independent organizations	<i>Fighting Striga</i>	1 st to 11 October 2015, and 4 to 16 July 2016	Semi-structured interviews and field visits	192 viewers

Case 3: DVD dissemination by independent organizations: NGOs and farmer associations, which received DVDs without any donor support, are supposed to distribute or show them to farmers, also free of charge (just the video or the video as a supplement to interpersonal interaction).

The case studies share some similarities. For example, purposive sampling (willingness of farmers to participate in the study) was used to select respondents for each case. As each case is based on the field reality of DVD dissemination, they may not present at first sight a convincing level of similarities to classify as comparable datasets. However, the authors consider that it is better to have a real, authentic field situation than an experimental setting, which could provide some uniformity, but could distort how farmers view and perceive the videos. In addition, the fact that data were gathered from varying respondents justified the specificity of each case. For example, distributing videos through commercial channels gives a fair chance to everyone to learn, because the DVDs were sold on the open market at an affordable price. In this case, the respondents could be farmers, researchers, students, business entrepreneurs, etc. In the case of the DVD dissemination by project support and independent organizations, the focus is only on farmers. So, in these two cases, all the respondents are farmers.

Each case was situated in Benin or Mali as part of a larger research project, “Videos for Farmers,” conducted in these and other African countries. Table 1 provides a more detailed overview of research activities. Two different DVDs were used; one for Case 1 and another for the other two cases, to prevent a distortion of the searched reality for market vendors who would, otherwise, have to compete with organizations that distributed the DVDs for free (see Kemp (2005) on avoiding conflict in market settings). The DVDs were a set of farmer-to-farmer videos with a language menu, offering the viewer the choice of watching the videos in French, English, and major West African languages, such as Fon, Bambara, and Yoruba (for the DVD *Improving vegetable production*) and Bambara, Bomu, Hausa, Mooré, Peulh, Zarma, Nago, and Dendi (for the DVD *Fighting Striga*). The content of each video is briefly described in Table 2. The videos were produced according to the zooming-in, zooming-out (ZIZO) method in which innovative technologies and their underlying scientific principles are explained by farmers and by a narrator in easy-to-understand language (Van Mele, 2006). In this paper, “DVD” means a disc with several videos while “learning video” refers to the videos on the DVDs.

Case 1: Commercial dissemination of DVDs

The DVD *Improving vegetable production* was sold by entertainment DVD vendors, agro-dealers, a vegetable vendor, and a motorcycle-taxi driver. This paper refers to such retail sales as the commercial approach of DVD dissemination. From August to December 2015, copies of *Improving vegetable production* DVDs were sold in four municipalities of southern Benin (Sèmé-Podji,

Table 2. Short description of each video

N° & video title	Duration	Short content description
(1) DVD: improving vegetable production		
1. Managing nematodes in vegetables	15:42	Prevention of nematodes by growing healthy seedlings, destroying crop residues that harbor nematodes, rotating with nematode-resistant crops, and by avoiding the introduction of nematodes from other fields.
2. Making a chilli seedbed	14:30	Using quality seeds in a seedbed one meter wide. How to protect the seedbed from the sun and rain with a straw covering, or with palm leaves. Protecting the seedlings from pests with an insect net.
3. Insect nets in seedbeds	11:35	Using an insect net to prevent damage of seedlings by grasshoppers and snails.
4. Transplanting chillies	11:35	Reducing losses when installing the seedbed with proper methods of field preparation and transplanting.
5. Drying and storing chillies	11:00	Methods innovated by farmers to harvest, dry, grade, and store chillies. Includes ways of alleviating the pain in one's hands after harvesting chillies.
6. Making chilli powder	10:30	How to process chilli powder that is of a consistent quality, taste, and color.
7. Drip irrigation for tomato	14:23	Installing a low-cost drip irrigation system, and managing organic fertilizer.
8. Reviving soils with mucuna	14:30	Planting a mucuna cover crop to revive degraded soil, and to control difficult weeds.
9. Managing soil fertility	6:50	Appropriate use of organic and mineral fertilizers, preventing nutrient loss with mulching and micro-dosing
(2) DVD of Fighting Striga		
1. Striga Biology	8:56	The weed develops from tiny seeds and not (as many farmers believe) from the roots of the cereal crops. Striga is a parasite. Rather than merely competing for space and nutrients, such as other weeds, striga attaches itself to the host's root and remains underground and unseen for weeks.
2. Integrated approach against striga	8:32	Organic and chemical fertilizer can help to manage striga, which does more damage in poor soils. A legume intercrop can kill striga. Remaining striga plants can be hand pulled before they flower.
3. Succeed with seeds	10:53	Farmers can test crop varieties to identify striga-resistant ones that perform well under local conditions.
4. Composting to beat striga	10:14	Farmers can make compost from manure and crop residues, even in arid places.
5. Micro-dosing	9:40	Application of small amounts of fertilizer to the base of the plant can save fertilizer while improving yields.
6. Animals and trees for a better crop	12:19	Cattle that browse on leaves and seed pods of trees can fertilize the crops with their manure to fertilize crops. Establishing good relations with herders.
7. Storing cowpea seed	12:00	Techniques to prevent damage by insect pests in cowpea seed, so cereals can be intercropped with this useful legume.
8. Grow row by row	9:10	Legumes, such as cowpeas, are trap crops. Striga germinates near legumes, but cannot attach to their roots. A legume crop helps to manage striga.
9. Joining hands against striga	7:46	Farmers can avoid the drudgery of weeding by working together.
10. Let us talk money	6:26	Analyzing costs and benefits of new technologies, such as Striga management, with farm communities.

Source: Access Agriculture

Cotonou, Ouidah, and Abomey-Calavi), which are major vegetable cropping areas (Adégbola and Singbo, 2001). They are also the main towns of the country where the entertainment video trade is well developed, and people are used to purchase DVDs and DVD players for home entertainment (Zoundji *et al.*, 2016). Each DVD was sold for at least United States Dollars (USD) 1.0, and the sellers registered the name, phone number, and address of the DVD buyers for the follow-up. From August to December 2015, a telephone survey was conducted with 426 people (about 64% of those who bought the DVD); these were viewers who called the study team

at the phone number pasted into the DVD jacket. Among these viewers who telephoned to request other videos to buy, 72.5% had bought *Improving vegetable production* videos. Authors also organized semi-structured interviews with 103 video viewers who had not called the researcher. The authors contacted other viewers over the phone and met 7 DVD buyers who identified 96 other video viewers who attended video screenings organized by DVD buyers.

Case 2: DVD dissemination by project support

Some NGOs and farmer associations received the DVD *Fighting Striga* from ICRISAT. These organizations screened the videos to farmers for free and left copies of the DVD in the communities for future screening on their own. From 25 August to 12 September 2014, we interviewed farmers who watched videos via project support (i.e., from ICRISAT) in 11 villages of three regions (Mopti, Ségou, and Sikasso) in Mali where the NGOs Aga Khan Foundation (AKF), Association Malienne d'Eveil au Développement Durable (AMEDD), and the farmers' organization Union des Agriculteurs du Cercle de Tominian (UACT) were engaged with ICRISAT in Striga management for food security. Through purposive sampling, we interviewed 154 farmers in Mali with a mean of 14 farmers per village. The absence of a pretest–posttest control group is justified by previous studies in Mali, which revealed that before watching the videos, farmers were not aware of the danger of striga seeds and unconsciously let the Striga plants flower, and disperse their seeds on farm (Van Mele *et al.*, 2016; Bentley *et al.*, 2017).

Case 3: DVD dissemination by independent organizations

The DVD *Fighting Striga* was also disseminated without project support by NGOs and farmer associations, which received the videos unsolicited, for free from Access Agriculture. These organizations are called “independent organizations” in this paper, because the organizations had no project support for distributing videos. As projects may provide incentives that influence farmers' technology adoption (Organisation for Economic Co-operation and Development, 2011), this case aims to explore farmers' learning and behavioral change from video without any project incentives. From 1 to 11 October 2015 and 4 to 16 July 2016, farmers were purposively selected in five municipalities (Glazoué, Tchaourou, N'Dali, Sinendé, and Bembereke) of Benin influenced by the NGOs Centre de Recherche et d'Action pour le Développement des Initiatives à la Base (CRADIB), Développement Durable Economique et Socio-Culturel (DeDESC), Groupe d'Etude et de Recherche sur l'Environnement et le Développement (GERED), and a farmers' organization: Union Communale des Producteurs (UCP) de N'Dali. We interviewed 192 farmers (Glazoué: 55, Tchaourou: 31, N'Dali: 90, Sinendé: 7, and Bembereke: 9). There is no control group here as well, because we conducted an exploratory study from May to June 2015, which showed that farmers were not doing any actions toward striga management in the villages where videos have not seen. In Benin and Mali, we also interviewed leaders of organizations that had received copies of the *Fighting Striga* DVD.

Countries research description and relevance of videos

Benin is a West African country on the Gulf of Guinea with a surface area of 112,622 km². Benin's population was about 11.2 million in 2017. More than 70% of the population works in agriculture. This contributes around 36% of the country's Gross Domestic Product (GDP) and 82.5% of export income (World Bank, 2019). Cotton is the principal cash crop, which received more attention from extension services than other crops. However, corn, beans, rice, peanuts, sorghum, millet, cassava, other tubers, and vegetables and fruits are grown for local subsistence and for export to neighboring countries. It is important to highlight that cotton is produced in all the municipalities (Glazoué, Tchaourou, N'Dali, Sinendé, and Bembereke) where the *Fighting Striga* DVD was disseminated. Nevertheless, cereal crops as major traditional staple crops are produced in those

municipalities. Mali is a landlocked country in West Africa. Mali covers a large area of 1,241,238 km², but 65% of it is in the desert or semi-desert region. Mali's population was about 19.6 million in 2018 (70% rural). Agriculture is the mainstay of the Malian economy, accounting for 50% of the GDP and employing much of the workforce (International Renewable Energy Agency, 2019). The most highly stressed regions of the country are in the south where agriculture is concentrated, including Sikasso, Mopti, and Segou. Cereals dominate the Malian diet, and the main subsistence crops grown are rainfed millet and sorghum millet, with commercial agriculture devoted to cotton and rice. Most of the major investments in agriculture, including extension services, market development, and increased use of inputs, have focused on cotton and rice, with less emphasis on crops critical to the country's food security, such as sorghum, millet, and corn. There are some variances between study areas (Sikasso, Mopti, and Segou). For example, except for the Sikasso region, which has a cotton-based system, the regions of Segou and Mopti have cereal crop-based systems, and Mopti is the strategic crossroads for the cereal trade (USAID, 2011). Despite weak extension support, farmers in both countries are slowly diversifying their crops. Farmers' access to technology will be of the utmost importance to foster agriculture diversification and food security.

The DVD *Improving vegetable production* is appropriate for Case 1, because vegetables are an important emerging cash crop in West Africa. However, vegetable production is limited by technical knowledge in Benin and Mali where cotton has received much more attention. Vegetables are intensive crops with high use of external inputs, such as fertilizer and pesticides. As video is an excellent tool to strengthen farmers' technical knowledge (Zoundji *et al.*, 2016; Zossou *et al.*, 2016), the *Improving vegetable production* DVD was sold through commercial channels in Benin and Mali to allow farmers to pay some of the cost of extension. Rural advisory activities implemented up to 2011 are neither cost effective, nor efficient or sustainable (Pye-Smith, 2012). Therefore, rural advisory service providers have been looking for cost effective, efficient, and sustainable extension tools and approaches. Due to the recent security issues in Mali, we were not able to complete the data collection on the commercial dissemination of videos in that country. So, Case 1 of this study focused only on the Benin experience. In Benin and Mali, the DVD of *Fighting Striga* used for Cases 2 and 3 is appropriate, because corn, sorghum, and millets are principal staple foods, and their production is constrained by Striga (World Bank, 2012). The successful management of Striga can bring rapid benefits to farmer communities in West Africa where this weed can cause an estimated 40–80% yield loss in sorghum and millet (International Crops Research Institute for the Semi-Arid-Tropics, 2009). The *Improving vegetable production* and *Fighting Striga* videos are relevant for the two countries as well as for the farmers involved in the study.

Results

Case 1: Commercial dissemination of DVD

Information and knowledge sharing

A vegetable farmer in southern Benin, who has a tea shop with a DVD player, bought a DVD and shows the videos frequently to attract customers (mainly farmers) in the village. During the first screening in the shop, 17 farmers attended and 11 of them asked where they could buy the DVD. For the next three screenings, an average of 13 farmers attended. Farmer' cooperatives in northern Benin (Atacora-Donga) paid to have 27 copies made of the DVD, and screened videos during meetings attended by 126 farmer representatives from 13 municipalities. After these screenings, the farmers' cooperatives distributed copies of the DVD to 13 farmers' associations at the municipal level. A vegetable farmer association in Abomey-Calavi municipality of southern Benin also acquired the learning videos and organized screenings for 68 group leaders. About 77% of these group leaders later bought their own DVDs and showed the videos to farmers in their villages.

Four local NGOs working in different areas in the country showed videos several times to vegetable farmers, while several church leaders screened videos to people before church services.

Faith-based organizations are key local institutions, so they could become more important in the future for sharing videos in farm communities. Most (67%) of the respondents surveyed watched the videos in groups, such as family, tea shops, churches, and farmers' groups. Although buying a DVD is an individual action, buyers like to watch the videos in groups. After buying the DVD, about 43% of respondents borrowed DVD players, and one person in five bought a DVD player (for USD 20 to USD 30) to watch the videos. Some people (about 11% of respondents) cooperated with others to gather enough viewing equipment, including the DVD player, and the battery. Such cooperating and viewing in groups reinforce social cohesion and may promote agricultural information sharing between farmers.

Farmers use learning videos in different ways, whether they buy the DVD or receive it as a gift (e.g., from relatives who buy the DVD at a shop). Several people took the initiative to share learning videos with a large audience. For example, a farmer who did not have the DVD proudly showed us how he watched all nine vegetable videos on his mobile phone. Someone had bought a DVD and converted the videos from the DVD into 3GP format (for viewing on phones) and shared them with the farmer. About 152 students from the high school of Agriculture in Benin downloaded all nine videos onto their Universal Serial Bus (USB) sticks from a fellow student who received the DVD as gift from his father, a farmer. The students took the further initiative of sharing the videos by copying them onto computers. These students also shared the videos with their families. People innovated by converting the videos to smaller file sizes (e.g., with formats such as 3GP) and by sharing them with friends via WhatsApp, Bluetooth, SD card, and USB sticks. Youths are interested in video and will become the extension agents of tomorrow.

Farmer satisfaction of learning videos

Farmers were motivated to pay for DVDs and make an effort to watch the videos. About 700 copies of the DVDs were sold within five months, and farmers were willing to pay for them. At the researchers' suggestion, vendors sold the DVDs for at least USD 1.0, but sometimes for more. Customers paid between USD 1.0 and USD 9.0 for a copy of the DVD. We received feedback through phone calls from 426 people (64% of the video viewers). These video viewers never asked for clarification on the content, but requested more videos on other crops. This feedback revealed that farmers are eager to buy more learning videos, which may be an opportunity for the private sector.

Changes in practices

After watching the videos, farmers made various behavioral changes. About 79% of respondents claimed to have rotated with crops that are resistant to pests; 62% protected seedlings by putting an insect net over them. Most of respondents (81%) said they now spent less money on pesticides, because they adapted their management practices according to information they learned from the videos. Respondents (11%) bought and installed drip irrigation kits. Learning videos disseminated via commercial channels have triggered farmers' behavioral changes in vegetable production (Zoundji *et al.*, 2018). Video enables viewers to reframe images they see, to later change their behavior (Witteveen, 2009). Videos can go beyond providing farmers with technical information, enabling them also to generate and promote innovations.

Sustainability of DVD dissemination

Farmers who buy a DVD take charge of and organize their own learning and access to technology without extension services. Where extension services have been reduced, an alternative is for farmers to buy DVDs and watch them in self-organized groups. Commercial dissemination of videos is an alternative, sustainable way to allow farmers to share the costs of extension, and to reach more farmers or anyone who needs agricultural information.

Case 2: DVD dissemination by project support

Since 2006, AKF, AMEDD, and farmer organization UACT and other organizations have participated in the project Harnessing Opportunities for Productivity Enhancement (HOPE) of sorghum and millets in Sub-Saharan Africa and South Asia, funded by Bill & Melinda Gates Foundation and implemented by ICRISAT. HOPE worked with farmer field schools to experiment with various Striga control options, developing practical and profitable-integrated Striga and soil fertility management practices for millet and sorghum. However, bottlenecks such as the scarcity of skilled trainers and maintaining quality training hampered efforts to scale up the new practices. Inspired by the experiences from AfricaRice with learning videos, in 2010, ICRISAT decided that videos were worth investing in. In 2011, ICRISAT commissioned Agro-Insight to produce the *Fighting Striga* videos in partnership with AKF, UACT, AMEDD, and others. In the videos, the farmer field school graduates described and showed many of their experiences.

Information and knowledge sharing

After screening the videos in the villages where they work, AKF, UACT, AMEDD, and other organizations leave copies of the DVD with the village development committee, a voluntary association of village people, which arranges further screenings. Among five villages where AKF organized public video screenings (facilitated by extension agents who could answer questions), four of the villages continued watching videos on their own (Table 3). In Kouna village, AKF screened the video for more than 40 farmers, including village leaders, women, and youth. After the video screening, AKF left 11 copies of the DVD with the villagers who liked the videos and decided to show them to everyone. For that, they set up a video committee and screened them for free in the village square every night for two weeks, until everyone had seen them. The village leaders bought the fuel for generator to show the videos. People from the nearby hamlets (less than 1 km) and faraway (more than 1 km) also came to watch the videos during the two weeks of screening. To keep watching the videos, people decided to distribute the 11 DVDs received as follows: three DVDs for the central village and two for each of the four hamlets.

Eight out of 11 villages in Mali continued watching videos on their own after the public screenings (Table 4). The audiences could easily recall the content of videos even those who had not seen the videos for two years and had only watched them once. The audiovisual image of video enhances farmers' memory, because when we asked farmers what they had learned, they usually described the content of the videos by focusing on the video images, which illustrated the practices they had used and adopted. During the interview, few farmers mentioned sharing the DVDs. Mainly farmers shared the ideas informally (especially hand-pulling striga and compost-making), talking about them with the people that they usually interact with in the course of their daily lives. A few groups shared more actively.

In the village of Nampossela with 100 copies of the DVD received from ICRISAT through AMEDD, we were surprised to observe that farmers never watched the videos on their own. These farmers grow cotton, which may have dampened their interest in the videos, because cotton kills striga seed in the soil. Cotton is a subsidized crop of national importance and, therefore, is well fertilized, which also helps control striga. So, striga may not a problem in the village of Nampossela.

Farmers' satisfaction of learning video

The farmers' reaction to the videos was mixed. In Kouna village, people enthusiastically organized their own video watching, but the farmers of Torokoro village did not watch videos on their own, because they lacked video screening equipment. However, those who had seen the video during the public screening could recall the content well. In two of the three villages where AMEDD

Table 3. Information and knowledge sharing

Organization (Region)	Village	Screenings by the organization's initiative			Screenings by local people's initiative		
		Number of screening	Number of participants	DVD left	Description of learning and information-&-knowledge sharing	Number of screening sessions	Number of participants
AKF (Mopti)	Kouna	1	More than 40	11	Community leaders created a committee to show the videos at the village square every night for two weeks	14	About 1800
	Madiama	3	More than 1000	1	A farmer who had a DVD player showed the videos at his place several times, for many people	Undetermined	More than 400
	Orgnon	1	About 570	1	A farmer showed the videos several times for other people	Undetermined	About 570
	Promani	1	Undetermined	6	A farmer showed the videos many times every night	Undetermined	About 2000
AMEDD (Sikasso)	Torokoro	1	About 460	2	Never watched the videos by their own	None	None
	Nampossela	2	About 650	100	Never watched the videos by their own	None	-
	N'Tonasso	1	About 70	2	Never watched the videos by their own	None	-
	Sirakèlè	1	More than 500	7	A teacher in the village owned a DVD player and helped farmers to watch videos in his house	3	About 90
UACT (Ségou)	Daga	1	180	2	Some farmers had the equipment and showed the videos many times	Undetermined	Undetermined
	Hasso	1	About 100	2	Never watched the videos on their own	None	-
	Togo	1	More than 300	2	Many people watched the videos with friends in their homes	Undetermined	About 800

Table 4. Change in practices or innovations inspired by learning videos

Organization (Region)	Villages (number of respondents)	Change in practices or innovations inspired by videos	Type of practice
AKF (Mopti)	Kouna (14)	Farmers began growing more cowpea and groundnut, which sell for a higher price than grains.	Cowpea and groundnut growing
	Madiama (14)	Adoption of micro-dose, intercropping of millet and cowpea, intercropping okra with cowpea and with groundnut, people pull striga up before they flower, women's group tends a collective field using striga control	Intercropping, micro-dosing, hand pulling
	Orgnon (12)	Intercropping and crop rotation with cowpea for 3 years in a striga-infested field, and start growing sorghum. Women organized savings and loan group as a result of watching the video and recalled the video "Let's Talk Money"	Intercropping, crop rotation, women's groups
	Promani (13)	Planting line by line, collecting organic manure for the fields	Planting line by line
	Torokoro (15)	Adoption of compost. Before watching videos, the farmers did not know that they could add plant remains to animal manure	Compost
AMEDD (Sikasso)	Nampossela (13)	Farmers have started an experiment based on the video animals and trees for a better crop.	Compost
	N'Tonasso (15)	New women's groups formed in response to videos to perform agricultural or income generating activities. A farmer has made a compost pit by himself.	Women groups formed
	Sirakèlè (13)	Cooperatives in the village added hand-pulling of striga as a reciprocal service between members. Someone reports Striga and the others go to the field to help pull up the weeds. Women credited "Let's Talk Money" video with helping them to improve their accounting.	Hand-pulling of striga, women's group
UACT (Ségou)	Daga (17)	Intercropping, micro-dose with mineral fertilizer (which they like because they have little money and this saves cash). Making compost and applying it in micro-dose in zaï. Groups of women and youth that already existed to do farm work for pay. After watching the videos, these groups added hand-pulling of Striga to the list of services they offer, & farmers hired them to do it	Intercropping, micro-dosing, compost, hand pulling
	Hasso (13)	Micro-dose, intercropping millet with cowpea & groundnut, making more compost, more hand-pulling	Intercropping and others
	Togo (15)	Farmers are now making compost, hand-pulling striga. Groups of women who did farm work for wages added hand-pulling as one of their services.	Hand-pulling and others

organized screenings, the villagers never watched the videos again, citing a lack of viewing equipment. In the villages where UACT operated, farmers did later watch the videos on their own initiative, except in Hasso village.

Changes in practices

Behavioral changes mentioned by farmers in Mali as a result of the learning videos are summarized in Table 5. In all of the villages, farmers learned about the biology of striga from the videos and experimented with various new practices, as a result of the information they learned. Intercropping was the most frequently mentioned (in four villages out of 11), following by hand-pulling of striga and compost-making. One farmer described an innovative form of intercropping. He puts two cowpea seeds and three or four sorghum seeds in one hole. In the next, he

Table 5. Comparison of dissemination models of learning videos

Comparison elements (approaches)	Learning video distribution models		
	Commercial dissemination of DVD	DVD dissemination by project support	DVD dissemination by independent organizations
Target audience	Anyone who is interested in agriculture: farmers, officials (active or retired), commercial farmers, agricultural entrepreneurs, students, researchers and others	Farmers (mainly those who have ties with a farmers' association).	Farmers or others (mainly those who have contact with the distributors)
Farmers are seen as	Serious active users who look for the information in response to their needs	Passive users. Village leaders with five DVDs make no better use of them than people with just one copy	Passive users
Information circulation and sharing	DVDs are shared with farmers and non-farmers (non-farmers give DVDs to relatives who farm)	Limited to farmers	Limited to farmers or sometimes to the DVD recipient who has watched it
Viewing frequency	Own initiative, several times	Depends sometimes on project support, once or twice	Depend mostly of DVD receivers
Covered area	All over the country and surrounding countries	Areas where the project works and surrounding villages	Village level
Facilitation	Not needed, self-learning	Optional; at times farmers facilitate, or NGOs staffs or extension workers	Self-learning
Main audience wishes	Viewers want to buy more learning videos, irrigation equipment and video viewing equipment	Farmers want to watch videos by themselves and request power generator, DVD player. NGOs and farmer associations request funds to organize more screenings	Farmers want to be helped watching videos (power generator, DVD player etc.). NGOs request funds to organize screening
Distribution time	Low	Very fast	Fast
Degree of feedback	High, 64% of videos viewers called the phone number pasted into the DVD jacket.	Low	None of DVDs receivers sent back the form. The viewers were requested to fill in the form and send back to NGOs or farmers associations, but none did
Influence of the extension workers on message	No	Possible	No
Possibility of viewers to ignore the message	No, self-determination	Maybe	Maybe
Ability to overcome self-learning difficulties	Yes, self-determination	Yes and no	No

only puts sorghum. The cowpea covers the soil, and he puts small doses of nitrogen fertilizer into the soil. So, farmers are creatively adapting the information from the videos. They also said that they wait until the ground is soft to hand pull the striga, so as not to break it off at the roots, a technique shown in the "Joining hands against Striga" video. A better understanding of the biology of the parasitic weed also triggered communities to work together to hand-pull striga weeds.

Sustainability of DVD dissemination

DVD distribution with project support enables farmers to easily watch videos at screenings in their community. After projects show the videos, most villages (64%) screened videos several times on their own initiative, a self-sustaining way to continue learning. Farmers who only see the videos in village screenings do recall at least some of the content.

Case 3: DVD dissemination by independent organizations*Information and knowledge sharing*

GERED received 50 DVDs and distributed most of them to 35 owners of DVD players in the municipalities of Sinendé and Bembereke. With the facilitation of GERED, each DVD receiver has shown the video once to about 20 farmers. In the Municipality of Tchaorou, DeDESC received 150 DVDs and distributed only 33% of them to 50 individual farmers. The farmer's association UCP N'DALI received 300 DVDs and distributed 93% of them to 30 farmers' cooperatives, which then organized at least one public screening in their village. After the video screenings, the cooperative leaders and young people in each village received a copy of the DVD for further screening. CRADIB received 300 DVDs and distributed all of them with the help of representatives of political parties at the village level who took the lead to show the videos in ten districts of the municipality of Glazoué. They planned the screenings carefully and announced them by the town crier and sometimes through local radio. They organized several public screenings and used the opportunity to talk about the communal (2015) and presidential (2016) electoral campaigns. Before the campaign season, DVDs were only distributed to farmers individually.

Of seven farmers we found in the municipality of Sinendé who had received the DVDs, only one watched the videos with friends and remembered the content of the videos. In the municipality of Bemberekè, only three farmers out of nine who received DVDs watched the learning videos and one of them organized a public screening in the village for about 35 viewers. In the Municipality of Tchaorou, 19 out of 31 DVD receivers interviewed watched and remembered the videos well. The cooperative leaders and young people of the UCP N'DALI showed videos several times to their cooperative members, families, and friends in 17 villages out of 30 where DVDs were distributed. The respondents recalled the content and were especially impressed with the part about Striga biology. In the municipality of Glazoué, 55 farmers were interviewed in five villages, and all of them had watched the videos in the public screenings organized by the representatives of the political parties; farmers remembered much of the content of the videos. Of those 55 farmers, 27 of them received the DVD individually, but only eight watched it on their own.

Farmers' satisfaction of learning video

During the research, it was a challenge to trace those villagers who received the DVD in areas where DVDs were distributed. All of the local people who received a DVD for free were asked to show the videos to other rural people, but all of them demanded support such as money to buy petrol or repair the generator. This can be interpreted as people's lack of motivation to pay for information. Villagers asked "*What will we do with videos when we do not have electricity or a generator and DVD players?*" according to the Chairman of the DeDESC. When DVDs are free, people may not recognize their value, or be uninterested in watching them. When the cost of a good is zero, people may assume that the value is also nothing. All the farmers interviewed were aware of and the damage striga causes. However, they took little initiative to learn from the *Fighting Striga* videos.

Changes in practices

Among five municipalities where we held interviews, farmers only tried out ideas from the videos in Glazoué and N'Dali. They tried intercropping, hand-pulling of striga, compost-making, and

micro-dosing, and some farmers also mentioned new ways of storing cowpea seed. More farmers mostly watched videos in Glazoué and N'Dali where political leaders and farmer associations were more active in showing the videos.

Sustainability of DVD dissemination

Independent organizations were less engaged in showing and distributing DVDs than organizations with support from projects. Except for farmers associations, none of the independent organization screened videos to farmers on the own initiative. All of them requested financial support, such as video screening equipment and travel expenses. But, even these independent organizations did distribute the DVDs to farmers, and some of them watched the videos. As a DVD can be printed for about \$1, some farmers can be reached at relatively low cost, through independent organizations, although distribution is more effective through organizations connected to a specific project.

Discussion

Using learning videos in agricultural extension is an innovative approach with the potential to inform many farmers about new technologies. However, the sustainable use of videos as a learning tool depends on the dissemination approaches. This study showed that those farmers who bought their own DVDs were more motivated to watch them, share them, and use the information creatively. Farmers are more likely to pay for services that are attractive and useful (Moumouni and Streiffeler, 2010). This study confirmed that farmers were less motivated to learn when they received the DVDs for free and without support to watch them. Farmers who watched the videos through project support continued to watch on their own if the videos were interesting to them. When a DVD costs nothing, people may think it is worth nothing. Wanvoeke *et al.* (2015) found a similar situation in Burkina-Faso where drip irrigation kits were no longer in use after being distributed for free to farmers. Similarly, metal grain bins had a higher demand and greater impact on Guatemala where the government charged for them than in El Salvador where the metal silos were given to farmers for free (Bokusheva *et al.*, 2012).

The reaction of NGOs was variable. Organizations, which were connected to a project, were more motivated to screen videos and distribute DVDs than organizations with no such connection. Not all NGOs, which received the DVDs for free, showed videos to farmers. Most of these NGOs were unable to monitor the DVD recipients, except for one NGO which was involved in video screening with politicians' help as part of an electoral campaign. On the other hand, some local NGOs that bought the DVDs did show the videos to farmers, several times, and also paid to make copies of the DVDs to give to farmers. In other words, NGOs that bought DVDs invested time and money to share the videos with farmers, while organizations that received DVDs for free requested support before showing them to farmers. The following quote from a Chairman of the NGO is a useful illustration: "*Dear friend, what can we do with your DVDs as a local NGO with very limited financial capacity?*" This is in line with The World Bank (2007) findings, which stated that attitudes and practices of organizations determine their propensity to innovation. NGOs requested incentives such as operational funds before showing videos to farmers.

Selling DVDs to farmers and NGO staff may foster self-determination to use and show the videos even without external support. Farmers and NGOs give more value to products, such as DVDs, that are sold at a cost, and not given for free. This dissemination approach provides evidence that farmers are willing to bear some of the costs of agricultural extension, which was formerly free of charge. Several authors have advocated for the use of service fees, while agricultural extension services are dependent on public service or donor funds (Ulimwengu and Sanyal, 2011). According to Forum for Agricultural Research in Africa (2006), the costs of extension service should be gradually shared with farmers' associations, and eventually, the

producers themselves to enable Africa's agricultural productivity efforts to be successful. Thus, farmers' cost-sharing through learning videos could be a sustainable support to the delivery of agricultural extension services. However, further empirical study is needed to explain clearly why farmers do not always value what they receive for free, because Shampanier *et al.* (2007) theorize that the free character of a product constitutes an additional benefit for consumers.

In rural areas of many developing countries, such as Benin, cash may be distributed during political campaigns to buy votes (Wantchekon, 2011), but it was astounding to see political leaders attract voters by showing agricultural learning videos in public screenings. Screening learning videos to farmers to increase electoral support is an innovation, although there may be ethical questions about mixing politics and communication services. Of all types of organizations, the farmer associations were the most highly motivated to show the videos and watch them with their members. As the success of any sustainable development program is largely determined by the level of participation of farmers (Axinn, 1997), the farmer organizations' video dissemination strategies are more sustainable than dissemination by NGOs. Thus, enhancing the capacity of farmer organizations to distribute videos would help them to provide more advice in response to their members' needs, and the organizations' improved capacity remains within the communities after donor support ends, so learning will continue. However, this approach favors members of farmers' organizations, while the commercial approach provides access to anyone who is interested in agriculture (Table 5).

Conclusion

Distributing farmer learning videos through commercial channels reaches more serious users and increases farmers' self-determination for learning, and farmers are more motivated to provide feedback than viewers who receive DVDs for free or via project support, NGOs, or farmer organizations. However, selling DVDs could take more time to reach the real end users, because distribution is slower than when videos move through NGOs and farmers' association. Nevertheless, this study suggests that distributing videos through the private sector is more inclusive and sustainable. As farmers are motivated to pay for the learning videos and most technologies transform into innovations through business mechanisms, developing new business models with videos may play a significant role in distributing and showing learning videos. Furthermore, as the private sector has a role to play, both in making technologies available and in teaching farmers how to use them, their contribution would create space for innovation. However, development partners and governments can help to support smallholder farmers where they cannot afford DVD players, screens, and generators. This study identifies the strategic and tactical principle underlying sustainable, viable, and effective distribution mechanisms of agricultural learning videos and constitutes an important step toward filling knowledge gap observed in the technology dissemination for farmers' knowledge development.

References

- Adégbola Y. P. and Singbo A. G.** (2001). *Analyse socio-économique de la filière des biopesticides en cultures maraichères au Bénin*. Benin: PAPA/INRAB et IITA-Cotonou, 1–30.
- Amudavi D. M., Khan Z. R., Wanyama J. M., Midega C. A. O., Pittchar J. and Nyangau I. M.** (2009). Assessment of technical efficiency of farmer teachers in the uptake and dissemination of push-pull technology in Western Kenya. *Crop Protection* **28**, 987–996.
- Axinn H. G.** (1997). Challenges to agricultural extension in the twenty first century. In Scarborough V., Killough S., Johnson D.A. and Farrington J. (eds), *Farmer-led extension: Concepts and practices*. London: Intermediate Technology Publications.
- Bentley J., Chowdhury A. and David S.** (2015). Videos for Agricultural Extension. Note 6.GFRAS Good Practice Note for Extension and Advisory Services.
- Bentley J., Van Mele P. and Musimami G.** (2013). The Mud on Their Legs-Farmer to Farmer Videos in Uganda. MEAS Case Study, 3. UASID and Agro-Insight.

- Bentley J. W.** (2009). Impact of IPM extension for smallholder farmers in the tropics. In Peshin R. R. and Dhawan A. K. (eds), *Integrated pest management: dissemination and impact*. New York: Springer, 333–346.
- Bentley J. W., Van Mele P., Touré S., van Mourik T., Guindo S. and Zoundji G.** (2017). Seeds of the devil weed. Local knowledge and learning from videos in Mali. Chapter 7. In Sillitoe P. (ed), *Indigenous knowledge: Enhancing its contribution to natural resources management*. Wallingford, UK: CABI.
- Bokusheva R., Finger R., Fischler M., Berlin R., Marin Y., Pérez F. and Paiz F.** (2012). Factors determining the adoption and impact of a postharvest storage technology. *Food Security* 4, 279–293, doi: [10.1007/s12571-012-0184-1](https://doi.org/10.1007/s12571-012-0184-1).
- Chianca T.** (2008). The OECD/DAC Criteria for International Development Evaluations: An Assessment and Ideas for Improvement. *Journal of Multi-Disciplinary Evaluation* 5, 9. ISSN 1556-8180.
- Dart J., Petheram R. J. and Straw W.** (1998). Review of Evaluation in Agricultural Extension. Rural Industries Research and Development Corporation Human Capital, Communications and Information Systems Research and Development. RIRDC Publication No. 98/136.
- David S. and Asamoah C.** (2011). The impact of farmer field schools on human and social capital: a case study from Ghana. *Journal of Agricultural Education and Extension* 17, 3.
- Davies K.** (2006). Farmer field schools: A boon or bust for extension in Africa. *Journal of Agricultural Education and Extension* 13.
- Davis K. E.** (2008). Extension in Sub-Saharan Africa: Overview and assessment of past and current models, and future prospects. *Journal of International Agricultural and Extension Education*, 15, 15–28.
- Davito T., Okry F., Kouevi A. and Vodouhè S.** (2017). Efficacité comparée de trois méthodes de diffusion d'informations rizicoles par des vidéos au Sud du Bénin. *Cahiers Agricultures* 26, 65003. doi.org/10.1051/cagri/2017053.
- Defoer T.** (2002). Learning about methodology development for integrated soil fertility management. *Agricultural Systems* 73, 57–81.
- Food and Agriculture Organization of the United Nations (FAO).** (2017). *Inclusive rural communication services – Building evidence, informing policy*. Rome: FAO, 101 pp.
- Forum for Agricultural Research in Africa.** (2006). *Framework for African agricultural productivity/Cadre pour la productivité agricole en Afrique*. Accra, Ghana: Forum for Agricultural Research in Africa (FARA).
- Funnell S. C. and Rogers P. J.** (2011). *Purposeful programme theory: Effective use of logic models and theories of change*. San Francisco, CA: Jossey-Bass.
- Goe L., Bell C. and Little O.** (2008). *Approaches to evaluating teacher effectiveness, A research synthesis*. National Comprehensive Center for Teacher Quality.
- Hellin J. and Dixon J.** (2008). Operationalizing participatory research and farmer-to-farmer extension: The Kamayoq in Peru. *Development in Practice* 18, 627–632.
- International Crops Research Institute for the Semi-Arid-Tropics.** (2009). Food security and diversification in the drylands, Annual report 2009.
- International Renewable Energy Agency** (2019). *Renewables readiness assessment: Mali*. Abu Dhabi: International Renewable Energy Agency (IRENA).
- Karuha M., Kiptot E. & Franzel S.** (2012). *The effectiveness of the farmer trainers approach in technology dissemination in the East Africa Dairy Development project in Uganda: A study of volunteer farmer trainers*. Nairobi, Kenya: East Africa Dairy Development Project.
- Kemp S.** (2005). *Principles of Microeconomics Study Guide*, 3rd edition. Nelson Thomson Publishers.
- Kiptot E. and Franzel S.** (2014). Voluntarism as an investment in human, social and financial capital: evidence from a farmer-to-farmer extension program in Kenya. *Agric Hum Values* 31, 231–243. doi [10.1007/s10460-013-9463-5](https://doi.org/10.1007/s10460-013-9463-5).
- Lie R. and Mandler A.** (2009). *Video in development: Filming for rural change*. FAO, CTA and Wageningen University.
- Moumouni I. M. and Streiffeler F.** (2010). Understanding the motivation of farmers in financing agricultural research and extension in Benin. *Quarterly Journal of International Agriculture* 49, 47–68.
- Nathaniels N. Q. R.** (2005). Cowpea, farmer field schools and farmer-to-farmer extension: a Benin case study. Agricultural Research and Extension Network Paper No. 148, ISBN 0 85003 760 3.
- Okry F., Van Mele P. and Houinsou F.** (2014). Forging new partnerships: lessons from the dissemination of agricultural training videos in Benin. *The Journal of Agricultural Education and Extension*.
- Organisation for Economic Co-operation and Development.** (2011). *Adoption of technologies for sustainable farming systems*. Workshop Proceedings, 4-7 July 2000. Wageningen, Netherlands: Organisation for Economic Co-operation and Development (OECD).
- Pye-Smith C.** (2012). *Agricultural extension: A time for change. Linking knowledge to policy and action for food and livelihoods*. Wageningen, The Netherlands: Technical Centre for Agricultural and Rural Cooperation ACP-EU.
- Shampanier K., Mazar N. and Ariely D.** (2007). Zero as a special price: the true value of free products. *Marketing Science* 26, 742–757.
- Ulimwengu J. and Sanyal P.** (2011). Joint Estimation of Farmers' Stated Willingness to Pay for Agricultural Services. The International Food Policy Research Institute. Discussion Paper 01070.
- USAID.** (2011). Région de Mopti: étude sur les bassins de production des spéculations céréalières de la région de Mopti.

- Van Mele P.** (2006). Zooming-in, zooming-out: a novel method to scale up local innovations and sustainable technologies. *International Journal of Agricultural Sustainability* **4**, 131–142.
- Van Mele P., Bentley J., Harun-ar-Rashid Md., Okry F. and van Mourik T.** (2016). Letting information flow: distributing farmer training videos through existing networks. *Indian Journal of Ecology* **43**, 545–551.
- Van Mele P., Wanvoeke J. and Zossou E.** (2010). Enhancing rural learning, linkages and institutions: the rice videos in Africa. *Development in Practice* **20**, 414–421. doi: [10.1080/09614521003710021](https://doi.org/10.1080/09614521003710021).
- Wantchekon L.** (2011). Deliberative Electoral Campaigns and Transition from Clientelism: Evidence from a Field Experiment in Benin. Working Paper. Princeton University.
- Wanvoeke J., Venot J. P., Zwartveen M. and de Fraiture C.** (2015). Performing the success of an innovation: case of small-holder drip irrigation in Burkina Faso. *Water International* **40**, 432–445. doi: [10.1080/02508060.2015.1010364](https://doi.org/10.1080/02508060.2015.1010364).
- Witteveen L.** (2009). *The voice of the visual, visual learning strategies for problem analysis, social dialogue and mediated participation*. Delft: Eburon.
- Witteveen L. and Lie R.** (2012). Learning about “wicked” problems in the Global South. Creating a film-based learning environment with “Visual Problem Appraisal”. *Journal of Media and Communication Research*. ISSN 1901-9726.
- World Bank.** (2007). *Enhancing agricultural innovation: how to go beyond the strengthening of research systems*. The International Bank for Reconstruction and Development, the World Bank.
- World Bank.** (2012). Africa can help feed Africa: removing barriers to regional trade in food staples, Poverty Reduction and Economic Management Unity, Africa Region.
- World Bank** (2019). *Benin digital rural transformation project*. Washington, DC: Project document, World Bank.
- Zossou E., Aminou A., Diagne A. and Agboh-Noameshie R.** (2016). Gender gap in acquisition and practice of agricultural knowledge: case study of rice farming in West Africa. *Experimental Agriculture* **53**, 566–577. doi: [10.1017/S0014479716000582](https://doi.org/10.1017/S0014479716000582).
- Zossou E., Van Mele P., Wanvoeke J. and Lebailly P.** (2012). Participatory impact assessment of rice parboiling videos with women in Benin. *Experimental Agriculture* **48**, 438–447. doi: [10.1017/S0014479712000117](https://doi.org/10.1017/S0014479712000117).
- Zoundji C. G., Okry F., Vodouhè S. D. and Bentley J. W.** (2016). The distribution of farmer learning videos: Lessons from non-conventional dissemination networks in Benin. *Cogent Food & Agriculture (2016)* **2**, 1277838. doi: [10.1080/23311932.2016.1277838](https://doi.org/10.1080/23311932.2016.1277838).
- Zoundji C. G., Okry F., Vodouhè S. D. and Bentley J. W.** (2018). Towards sustainable vegetable growing with farmer learning videos in Benin. *International Journal of Agricultural Sustainability* **16**, 54–63, doi: [10.1080/14735903.2018.1428393](https://doi.org/10.1080/14735903.2018.1428393).

Cite this article: Zoundji GC, Okry F, Vodouhè SD, Bentley JW, and Witteveen L. Commercial channels vs free distribution and screening of agricultural learning videos: A case study from Benin and Mali. *Experimental Agriculture*. <https://doi.org/10.1017/S0014479720000149>