

Fighting striga and improving soil fertility with videos in Mali

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Summary

In 2011, ICRISAT and Agro-Insight made 10 farmer-to-farmer videos on the control of striga, a parasitic weed endemic to sub-Saharan Africa. As the weed can destroy entire cereal crops, particularly on poor soils, both striga and soil fertility management need to be tackled together, hence the need to develop this comprehensive “Fighting Striga” series. The videos have been translated into 21 languages and over 50,000 copies of the “Fighting Striga” DVD have been printed, with all 10 videos on it. In 2012 about 10,000 DVDs were distributed to over 300 organisations in Mali, with audio tracks in French, English and the major languages of Mali. In November of 2013, Jeff Bentley and Sidi Touré visited 27 of these organisations and 11 farmer groups in 10 villages. Twenty six of the 27 organisations visited had either distributed the videos, shown them to farmers or both. In all of the villages visited, farmers grasped the biology of the weed and experimented with various new practices, as a result of the information they learned. Compost-making, intercropping and micro-dosing (adding small amounts of fertiliser directly to the planting hole) were most commonly adopted. A better understanding of the biology of the parasitic weed also triggered communities to work together to hand-pull striga weeds, as they realised that only joint efforts would lead to lasting results.

Introduction

Since 2006, ICRISAT and partners have conducted farmer field schools to experiment with a wide range of striga control options. As a result, practical and profitable integrated striga and soil fertility management (ISSFM) practices have been developed for pearl millet and sorghum. However, the scarcity of skilled trainers and maintaining quality training while scaling up have been main bottlenecks. Inspired by the experiences from AfricaRice with farmer-to-farmer video, ICRISAT in 2010 decided that this was an approach worthwhile investing in. As a result, the farmer field school experiences provided the key building stones for a number of videos related to ISSFM. In 2011, ICRISAT approached Agro-Insight to have their staff and staff of their partners in Niger, Nigeria, Ghana and Mali trained in farmer-to-farmer video production. When the teams went back to the FFS (farmer field school) to film the videos, and the farmers began talking about how they managed striga, ICRISAT realised how much the farmers had learned in the FFS.

In 2012, the comprehensive series of ten farmer-to-farmer videos was translated into French, English and six major West African languages (Bambara, Boma, Hausa, Mooré, Peulh and Zarma). In 2013, the videos became more widely known and popular. Other organisations considered the videos effective and relevant to the farmers in their own country and translated them into Arabic, Swahili and many other languages, meeting demand from farmers across the continent.

The 8-12-minute videos were put onto a single DVD under the title “Fighting Striga”. On the opening page, people can select any of the 8 languages. The videos can be watched in any order, and each one can stand alone. An overview and short description of each video is given in Box 1.

To make sure the videos get in the hands of service providers and farmers, in Mali ICRISAT distributed some 10,000 copies of the “Fighting Striga” DVDs to many organisations and individuals, representing “old” and “new” ICRISAT partners.

Box 1. Description of the ten farmer-to-farmer training videos under the “Fighting Striga” series

1. Striga Biology. How the weed develops from tiny seeds, not from the roots, as many people think. While other weeds are merely bad neighbours, competing for space and nutrients, striga is a true parasite which attaches itself to the host’s root, then remaining hidden underground for weeks, so it is the last to emerge, and escapes the early season weeding.
<http://www.accessagriculture.org/node/241/en>
2. Integrated approach against striga. Fertilise the soil with composted manure, because striga damage is worse in poor soils. Add small doses of mineral fertiliser to the base of the plants and intercrop with legumes which kill striga. Hand pull remaining striga plants before they bear seed. Striga is best controlled using multiple options at the same time in the same field.
<http://www.accessagriculture.org/node/243/en>
3. Succeed with seeds. How to test crop varieties to find the ones that are the most resistant to striga and adapted to farmers’ real conditions
<http://www.accessagriculture.org/node/245/en>
4. Composting to beat striga. Tips on making compost from manure and crop residues, especially in an arid climate. <http://www.accessagriculture.org/node/247/en>
5. Micro-dosing. Less is more; apply smaller amounts of fertiliser to the base of the plant, instead of spreading it over the whole field. This improves yields and saves money.
<http://www.accessagriculture.org/node/249/en>
6. Animals and trees for a better crop. Livestock can eat the leaves and seed pods of some trees, leaving manure to fertilise crops, especially if farmers establish friendly relations with herders.
<http://www.accessagriculture.org/node/251/en>
7. Storing cowpea seed. Simple ways to keep insect pests out and keep cowpea seed healthy and viable, so the household has enough seed to intercrop cowpea with cereals.
<http://www.accessagriculture.org/node/253/en>
8. Grow row by row. Cowpeas and other legumes are trap crops which stimulate striga to germinate, but not to attach to the host’s roots. Intercropping and rotating with legumes kills the striga seed in the soil. <http://www.accessagriculture.org/node/255/en>
9. Joining hands against striga. Weeding is pretty boring and tedious work, but farmers can beat the drudgery by working together. This is basically labour exchange, a time-honoured practice in Africa and elsewhere. Advice for farmers should show respect for all good ideas, old and new.
<http://www.accessagriculture.org/node/258/en>
10. Let’s talk money. A brief view of costs and benefits under farmer practice and integrated Striga and soil fertility management. Managing striga costs more, but the bigger yields are worth it.
<http://www.accessagriculture.org/node/260/en>

Method

From November 10-21, 2013 we visited 27 organisations which had received Fighting Striga DVDs and interviewed 11 groups of farmers in 10 villages in three regions from Mali: Sikasso, Koulikoro and Segou. We used a simple questionnaire and did follow-up phone interviews in

some cases. These interviews were designed to build on quantitative data which ICRISAT is collecting.

With the involvement of 173 extension agents more than 12,000 farmers watched the Fighting Striga videos through public screenings (see Table 1).

Table 1. Screenings of Fighting Striga videos in Mali, 2013

Number of village screenings	Men	Women	Children	Audience size
156	5,309	3,423	3,490	12,241

Source: ICRISAT

Organisations

Interviews in Bamako

Several people said that the little animation in the Striga Biology video is the most convincing part of the videos. Most farmers groups and villagers have video kits and if they don't they can watch the DVDs on someone's equipment in the village. Many people in the head offices in Bamako knew who had received DVDs in their regional offices. But the head offices had received little feedback from the provinces.

MobioM (Mouvement Biologique Malienne)

Abdoulaye Diakité in Bougouni, said that the farmers learn all of the material in the videos. He did in-depth interviews with five farmers, and they understood the content of the videos well, including striga biology, compost and other techniques. Abdoulaye likes watching videos with the communities, because he gets to see their reactions to the ideas like, "What? Striga actually has seeds?"

MobioM uses various styles of distributing and using the DVDs:

1. At least one copy of the DVD ended up in each of the 98 cooperatives under MoBioM
2. With a field team (a supervisor, an adviser and a farmer experimenter). They share the videos in workshops, in the local language.
3. The radio stations air the soundtracks and then distribute the videos.
4. Through the Service d'Agriculture, and IER in Sikasso.

Extension and pest control

Nouhoum Samake is head of pest control at the Direction Régionale de l'Agriculture (Service d'Agriculture) that has shown the videos to farmers in meetings. Mr. Samake is delighted that the videos are in the local languages. The farmers are adopting some of the ideas, such as micro-dosing, making compost, intercropping and rotation of cereals with legumes. The Service promoted organic fertiliser and compost before getting the videos, and still does, but the videos are a good additional support for extension. Nouhoum Samake was pleased when Sidi left him more DVDs.

Chamber of Agriculture

The farmer-based organisation APCAM (Assemblée Permanente des Chambres d'Agriculture du Mali) received about 1,200 DVDs. We talked to Andrés Fombeï, secretary general of the Chamber of Agriculture for the Sikasso region, and to Cipris Sangougou, secretary of the local Sikasso delegation (DLCA—Délégation Locale de la Chambre d'Agriculture). Mr. Sangougou only received 17 copies of the DVD. The Chamber had divided them according to size of each of the seven local sectors, but he



Andrés Fombeï, right, pleased to get more DVDs

knew exactly who had received each one, between the local arrondissements and the staff. Before organising meetings to show the videos, the Chamber first reviewed them, with their staff, and then with a pilot group of farmers. The Chamber knows farmers better than to waste their time with irrelevant videos, but the Fighting Striga videos passed the test. According to Sangougou, farmers are now mostly adopting intercropping with legumes and hand-pulling of striga. After watching the videos they have started to demand seed of striga-resistant sorghum varieties (which is the topic of one of the videos).

The Union des Agriculteurs de Cercle de Tominian (UACT)

Pierre Théra and René Koné are both technical people and farmers, and culture brokers in many ways. They lead the UACT and help its member cells to sell their cash crops (sesame and fonio) and cereals in bulk at higher prices. Pierre grows fonio, sesame, and upland rice and René Koné is a seed producer of millet, sorghum, groundnuts, cowpea, and fonio.

They have used FFS for a long time, first mentoring the farmer trainers of the striga FFS in the area and then helping the video makers to find FFS graduates to interview, and then distributing the finished videos through their network. Currently, in collaboration with CRS (the Catholic Relief Services) they are running nine clusters of five FFS each, training local farmers as facilitators. The striga videos now come back full circle: initially based on the results of FFS they now become a training tool in scaling-up the FFS. Pierre and René show the striga videos to the facilitators, who then show them to farmers in the villages. The FFS still do things the field schools have always done, like farmer experiments and learning in the field, the videos don't replace those. The videos are more like the "special topics" (often talks) that have always been the understated, school-like part of FFS.

Meet the cast

In the village of Souara we met Arafî Thera, Christine Keita, Elisabeth Thera, Tankele Thera, the farmers who starred in the video on compost. Their 15 minutes of fame has not ruined them for rural life.

They were hard at work on the sorghum harvest when we met them, and compost pits are



René, Araba Thera, Arafî Thera Christine Keita, Elisabeth Thera, Tankele Thera (back)

everywhere in the village. The folks continue to experiment with compost and striga control, such as making compost, and applying it in micro dose, hand-pulling striga, ridging or hilling

up, timely weeding, intercropping cowpea and sorghum (and peanut and sorghum) to keep the soil moist.

Distribution and use of videos, and farmer response to the ideas

Table 2 summarises interviews with 25 organisations, including umbrella groups of farmers organisations, international and local NGOs and radio stations. The organisations received from five to over 1200 DVDs. All of the organisations distributed DVDs, and most screened them for villagers. As a result, the farmers are using lots of the techniques, including seed conservation, intercropping and composting.

Table 2. Distribution and use of DVDs

Organisation	Type of organisation	DVDs received	Distribution & use of DVDs	Ideas farmers used
AOPP	Group of farmers' associations	350	Public screenings by staff members in the villages. DVDs distributed to individual farmers in meetings	Striga management, seed storing, compost, hand-pulling
Farm Radio International	International NGO	1201	Via partners, training meetings with farmers. DVD given to Farm Radio/Burkina Faso. Screenings in villages. DVD given to individual farmers	Intercropping, compost
IER	Govt. of Mali	816	Distributed to all 8 research centers. Screenings at IER offices	Not sure
World Vision	International NGO	511	Used at FFS in 65 villages with government extension agents	Striga management, compost, intercropping, hand pulling
Reach Italia	International NGO	51	Used at meetings with government extension. Distributed individually at meetings	Integrated striga management
CSPEEDA	NGO	101	In 6 villages gave a DVD to village head, 1 to youth & 1 to women. Videos screened in villages	Striga management, compost, intercropping, hand-pulling
WHH	International NGO	50	DVDs given to communities through the Service d'Agriculture	Not sure
CARE	International NGO	81	Distributed to individuals & to villages	Compost for rice & market vegetables
Radio Siby	Community radio	50	Distributed individually to 50 farmers	Compost
Radio Arc-en-ciel	Commercial radio	501	Broadcast soundtracks of 5 videos in 3 languages. DVD given to farmers on demand	Compost, micro dose
Helvetas	International NGO	112	Through Helvetas programs, to rice growers & cooperatives	Will start using compost pit
Mobiom	Group of farmer assn's	502	Screened in villages. Distributed to individual farmers & to partners	Compost, striga management
Service d'Agriculture Sikasso	Govt. of Mali	100	Distributed DVD to the 7 sectors of the region. DVD left with individuals after screening in villages	Micro dose, compost, intercropping, hand-pulling
Chambre d'Agriculture, Sikasso	Group of farmer assn's	17	The regional Chamber of Agriculture distributed DVDs to all 7 local Chambers (DLCAs), including this one, which screened the videos & gave DVDs to individual farmers	Intercropping, compost
Amedd, Koutiala	NGO	248	Distribution to individuals, used in training	New varieties, compost in heaps, intercropping
CAAD, Koutiala	NGO	5	Distribution to individuals & groups, with a partner NGO	Intercropping
AMASSA	NGO	158	Via 52 farmer groups, other AMASSA programs, to individuals after village screenings, via CMDT, Service d'Agriculture & NGOs	Intercropping, compost, tests to choose sorghum & cowpea varieties
Radio Shiignen	Commercial radio	26	22 DVDs distributed to farmers who wrote letters of request. Broadcast soundtracks of 8 videos in bambara	Micro dose & organic fertiliser, seed storing, compost
World Vision, Yorosso	International NGO	20	Distribution in 5 communes of Yorosso. Distribution to individuals	Not sure
UACT, Tominan	Group of farmer assn's	??	With local government. In 9 farmer groups of the UACT. Distribution to individuals & to partner NGOs, government & radio	Hand-pulling, intercropping, mechanised micro dose

Organisation	Type of organisation	DVDs received	Distribution & use of DVDs	Ideas farmers used
Inter-coopération Suisse, San	International NGO	20	Distribution DVDs to farmer groups in Bla, San, & Tominan	Not sure
World Vision, Djéli	International NGO	150	Local government, FFS farmer-trainers. DVD given to farmer groups after village screenings	Hand pulling, intercropping, micro dose, compost
ULPC, Dioïla	Group of farmer assn's	50	To member cooperatives, government extension, Chambre d'Agriculture, to 5 farmer trainers of the ULPC; to individuals & to Radio Dièdougou;	Intercropping, compost, striga-tolerant varieties
Radio Dièdougou, Béléco	Commercial radio	73	DVDs given to villages, to government extension, NGOs, local government, screenings at the radio station & in villages	Seed storage & compost
USCMPD	Group of farmer assn's	50	Screenings & distribution in member in cooperatives, with Q&A	Compost widely used thanks to videos & yields increasing

Farmers learn from videos

The seed growers

Amid the gorgeous sandstone outcroppings of Siby we met a few men from a seed producer's group,
 CooproSem (described in Dalohoun et al. 2011). There were some surprises. One, half of the men hadn't seen the videos themselves, even though the others talked about how they had taken the DVD to show the videos to other people. But the others talked about the videos in enough detail that it was clear they had seen the videos. They recalled the content and how the part about striga biology impressed them, to know how the seeds spread and that animals could even be a vector for the striga seeds.

Their innovations were good. One farmer described a kind of intercropping he had innovated. He puts in 2 cowpea seeds and 3 or 4 sorghum seeds in one hole. In the next he only puts sorghum. The cowpea covers the soil, and he puts small doses of nitrogen fertiliser into the soil. So they are taking the innovation on board. 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.

One farmer also covers the crop deeper at the time of ridging (*buttage*), to keep the striga from coming back up.

Too busy

In Sanambelé we were lucky to get three people to talk to us. The peanut harvest was in full swing and everyone was in a hurry to get the rainy season crops out of the field so they could plant vegetables in the lowlands (*bas-fonds*). The three people we talked to, Karim Coulibaly (a mature man), Maimouna Coulibaly (peanut farmer and information secretary for a woman's group) and Souleyman Sacko (youth) had adopted some ideas, mainly the use of chili, and native plants to store cowpea seed.

Karim Coulibaly uses a plant called "benefi" which he saw on the video. After threshing the cowpea, he winnows the seed and puts it in the granary with the benefi, one layer at a time.



Maimouna Coulibaly

Maimouna uses chili powder to conserve her groundnut seeds. She puts in layers of chili in the peanut seed, as shown in the cowpea seed storage video, and the insects do not attack. She also uses the leaves of the chili plant, which is an innovation not shown on the video.

ICRISAT brought them a copy of the video, and the farmers set up a kit in the village centre and invited all community members, and then watched all 10 videos, without facilitation or without any further support from ICRISAT.

Village of Yorobougoula, Cercle de Yanfolila, Région de Sikasso, Commune de Guaman

The village has a farmer-trainer (*formateur*) from the NGO Mobiom, Bakary Diallo, who made good use of the one DVD they got from ICRISAT. Bakary took the DVD around to different households and also showed it in the village centre. People saw it, most of them anyway, because they have electricity here, so it is easy for them to watch it. They recalled a lot.

Madame Diallo remembered inter-planting sorghum and millet with peanut and cowpea, which is a good point, since the video only mentions peanut in passing, while stressing cowpea, so she was paying attention.

She also remembers the integration of livestock and agriculture. They have practiced that for a long time here, but now people understand that the two really are compatible and people are improving their arrangements between pastoralists and farmers. Now farmers have more crop residues, and so they can give some to people who have animals. This can happen between relatives, one who has animals and one who farms, or between people who are not related.

Another lady, Sira, a farmer and business person, remembers integrated striga management, hand pulling of striga, intercropping, and using cowpea to control striga.

People also recall how the video showed working together as a community to control striga.



Bakari Diallo (standing) helps distribute the DVDs

Bakary Diallo, the facilitator, says that he recalls intercropping and striga biology. He says “I like the videos because they are in Bambara and everyone can understand them.”

The people also put many of those ideas into practice. For example Bakary Diallo started making compost out of manure after watching the video, but he makes it on top of the ground, instead of in a pit. This innovation saves him the work of digging a pit. He has tried micro doses of fertiliser in sorghum, as discussed in the video, but also in cotton, which is his own innovation.

Madame Diallo has experimented with a new way of intercropping of millet with cowpea, and of sorghum with cowpea, and has seen that the cowpea keeps the soil humid. She tried three lines of sorghum and four of cowpea, which covers the whole parcel. Intercropping allows her to earn more, because besides her cereal harvest, she gets the cowpea crop residues to feed to her livestock.

Sira also tried intercropping cowpea with sorghum, but she put in three lines of cowpea for each one of sorghum, because she wanted more fodder for her animals. People adapt the ideas for their own needs, specifically the intercropping technique.

Video and Farmer Field School

100 FFS blossom

Douba Kamaté and Karim Dagno from the IER research station in Sotuba, near Bamako, are implementing an impressive 100 Farmer field schools on integrated Striga and soil fertility management. They start with a “theory” part (a school with walls) where they have electricity and they can show the videos to field agents and farmer trainers. They show the farmers all of the striga videos there, and then they have a regular FFS, out in the fields. They said the video is really good for showing the biology of striga, especially how it attaches to the roots of the crop. Watching the videos first makes it easier for the farmers to understand the reasons behind using specific technologies to manage striga, which for these two are a set of fertiliser plus a tolerant sorghum variety plus cowpea intercrop, all used at once.

FFS groups

Representatives from FFS groups in Makandiana, near Siby, sat waiting patiently for us till 2 PM. They remembered a lot:

- The time for hand-pulling striga is when one makes the ridges in the field (with a daba, if there is now cowpea intercropped with it). Because the striga flowers then, one can pull it up and ridge at the same time (i.e. it’s practical to pull up the weed).
- To avoid breaking the striga, they wait until the ground is a bit moist.



Farmer facilitators

- The video allowed them to see how the striga seeds spread, which can be in the animal's dung, making livestock a vector for striga.
- Before, they used to leave striga in the field after weeding it, but now they see that it is necessary to take it out of the field and burn it.
- The compost pit
- Storing cowpea seeds with sand or ash.
- The video showed the importance of working as a community, which makes it possible to pull up a lot of striga at once
- Compost making, integrated striga management, micro dose and intercropping.

When we asked what they wanted for future videos, Bamory said he wanted to make one on the intercropping style he had invented. That shows a lot of self-confidence and that they fully grasp the concept that the videos feature farmer ideas. They know that the farmers in the videos are real, not a sham or a plant.

They said that the women and the youth all saw the DVDs. They showed the videos in public places and stopped from time to time to let the women and youth ask questions.

“Who answered the questions?”

“We did, the farmers trained in integrated striga management through the field schools.”

When they saw the videos and discussed them in public, the FFS graduates realised how much they had learned in the FFS, and how little of it they had explained to their neighbours and relatives.

Yes, we have no equipment

People in the village of Nampossela were busy harvesting peanuts, but three men did talk to the team. They had adopted some ideas, such as hand pulling of striga, making compost, and intercropping cowpea in sorghum and maize, which had really kept striga from germinating. They had also tried the triple bag technique for cowpea storage, which few others have mentioned. The triple bag is a more complicated than some of the other technologies and involves some external inputs (the plastic sacks without holes) so that may explain why such an idea is more likely to be transferred in a solid FFS than via a video. But it emerged that only one of them had seen the videos (probably just a couple of them) at an AMEDD training meeting in Koutiala.

However, they had had an FFS on integrated striga management, linked to an ICRISAT project that was helping farmers to test ISSFM and evaluate it accordingly. So they were really telling us what they had learned from the FFS. They added that they didn't show the DVD in their village because they have VCD equipment, not DVD. This is one FFS that didn't take advantage of the DVD, perhaps because they already felt satisfied with their striga control. They have a trial, now in its third year, and there was very little striga present, even in the “farmer control”, so they may have lacked interest in the striga videos because they had solved their striga problem.

Well organised women

The team visited Sirakelé on Sunday but no one met us. Miriam Sara (president of the village groups) apologised and said that she would have a few people ready by Monday afternoon, if we could come back. We could, and on Monday we arrived 10 minutes early and were surprised to see 40 people waiting for us, mostly women.

They remembered a lot, including how to store cowpea seed with chili, with the double sack, sand, and how to dry the seed in the sun. They remembered the little animation that explains how striga attaches to the roots of cereals, and how it stays under the soil for a long time after it germinates, and before it emerges. They recall the farmer trials shown in the video, with one infested field and a healthy one. One man explains how before he saw the video, he did not know that striga came from seed.



Organised women of Sirakelé with visiting anthropologist

Another woman described applying fertiliser in micro dose, and how to make compost in a pit.

And they had tried a lot of the ideas:

1. Five of the women with neighbouring fields joined together to hand pull their striga, then dry and burn it.
2. Four people had made compost pits.
3. One was saving seed in a double sac.
4. Another had applied micro doses of compost

That was a lot to remember and to try out. The NGO AMEDD only showed two videos per village (integrated striga management, and cowpea seed conservation). Yet these folks had seen most or all of the videos. AMEDD showed them two videos and then left some DVDs in the village. Later the people got together and watched the other videos

500 people watched the videos. They screened them during the weekly fair, with an old video kit they had in the village, one which later broke down. Many people left the market to come watch the videos. And the villagers made sure that they explained the content to the others.

They had had FFS before, but on cowpea and peanut, not on striga. Recall that an FFS reaches 25 people, not 500, but the genius behind FFS is that it organises people and these were obviously organised enough to watch the videos.

The women had played a role in that. As one woman put it: “We women are very well organised. We can watch videos together with the men and help explain things to each other. Men and women are complementary.”

Videos in FFS

In Gnamana village near San, Bouba Tangara, Brama Tangara, Mama Fabe, and Moussa Tangara, the FFS farmer-facilitators, sat waiting in the shade of a millet storage platform. They were dignified, elder men who all had a notebook or a sheaf of papers. They had led an intensive cluster of five FFS for their neighbours. One year was a conventional FFS on integrated striga management, sponsored by World Vision and supported technically, from a distance by ICRISAT. By the second year they received the striga videos and showed them all.



Mama Fabe, Brama Tangara, Bouba Tangara, Moussa Tangara, Sidi

Mama said that he hadn't realised that striga came from seeds until he saw the videos. That is quite a mouthful for a person who had already received training and then led an FFS on striga, not to have noticed this key bit of biological-ecological background, but not everything can be observed with the naked eye in a blistering field of sorghum. Society has created scientists to take the time and use the tools to observe these difficult-to-observe truths. Striga seeds are so small that they look like powder. They easily escape notice. Through the videos scientists can explain this fact to a large audience.

The videos may have helped the expert farmers, because they all did experiments.

Bouba tried micro doses of 6 g of mineral fertiliser per millet hill. He measures the 6 g by taking three pinches with three fingers.

Mama intercroops two lines of millet with three of cowpea, leaving no space for striga and obtaining a good production. He also intercroops his maize with cowpea.

Brama has mixed urea and mineral fertiliser in a micro dose with cowpea seed. At only 7 kg per 0.25 ha he was surprised at how much the yield improved. He mixed the seed with the fertiliser in a small container and planted them together.

They had also taken the trouble to show the videos to everyone in the villages, not just to the lucky ones enrolled in the FFS. Striga produces so many tiny seeds that it demands action from the entire community, which in this case may have spurred people to show the videos to others. Many people also saw the videos on national TV, so everyone saw the videos at least once. “We realised that it was important for everyone in the community to manage striga, especially to pull it up, otherwise our efforts to control it would be in vain.”

One of the videos talks about organising communities for striga control. These communities are definitely coming together. After their three years as an FFS and with some organisational

support from World Vision, they are now registered with the government as a formal seed producing cooperative.

Was that VCD or DVD?

Wakoro, near Dioïla, has a lot going for it. The village has had a four year field school, the longest we've ever heard of. The villagers have tested new crop varieties with ICRISAT. The new grain store, built with support from world food program, offers welcoming shade on its porch, where we met.

The team was eager to learn how such an exceptionally well-prepared group was able to use the striga videos, but they couldn't even get the DVDs to run. Most of the people we met with were FFS trainers from a cluster of five FFS, and they almost all had their own copy of the DVD. Some had DVDs and not CD players. Others put their DVD into the player only to realise that their kit was for VCD and wouldn't show a DVD. Djeneba Coulibaly even gathered a group of neighbours only to find that she couldn't run the DVD and had to send them away, in what must have been a most embarrassing moment.

The one person who did get the DVD running got confused by the start-up menu and either couldn't read it or didn't know what it was, so he watched the videos in French instead of Bambara.

Perhaps because they have received so much material aid, they have become used to receiving donations, but these are not the poorest of the poor. They have started to adopt hybrid sorghum and are producing a surplus to sell to WFP. One young man was proudly showing off his new motorcycle, with the packing still on the chrome parts. These folks could buy video kit if they really wanted it. But then, they don't have electricity, so they have the added bother and expense of setting up batteries or a generator. No one in the village has a hall to show videos for a fee. The equipment failure really was a stumbling block for them.

Radio Stations

At Farm Radio International in Bamako, Lamine Togola said were doing video screenings with farmers, because ICRISAT suggested it, and not really using the radio. They found the videos more effective than demonstration plots, especially for training their staff. The videos helped the staff learn about striga. Some of the extensionists were out there talking about striga and couldn't even recognise it in the field. They saw the plant and just thought it was a flower brightening up the field.

Small scale community radio

Samuel works at a small, community radio station in Siby. They are so small they are only able to stay on the air for a few hours in the morning and again at night. He got 52 copies of the DVD and kept two. He gave the others to people that he deemed to be truly engaged in agriculture.

How many of the 50 were women?

“Why, they were all men,” he said, a bit surprised at the question.

Radio is interesting because people can use the videos in different ways as content, but Samuel had not used the soundtracks at all. First he gave away the DVDs to the 50 engaged men, and then he announced the DVDs over the radio. Two people came to him to ask for DVDs, but by then he had none to give away. (At the end of the meeting, Sidi gave him a few more).

Samuel didn't play the sound track, because to do that he would have to charge money. It seemed like a poor excuse, but he did say that finances were tight (as they are in most community radio stations). It may be easy to think of money when a foreigner shows up in a car.

Samuel has a well behind his house, and after watching the videos he began making compost pits there where he mixes household refuse with the dung from his horse.

The light

At Samuel's house we met Gnagalé Camara, a leader of a women's group, Gneléni, which means “light,” Sidi explained. “It was the name of a brave woman,” Gnagalé says simply.

Several women had been there waiting for us, but gave up and went to harvest peanuts.

Gnagalé explained that the group of women met to watch the videos, but when it got dark they went home, after watching four. They never did finish watching the videos as a group, because they need money for gasoline for the generator.

All the while that Gnagalé talked, we could hear the noise of the television coming from Samuel's house. He said he ran it on electricity from his solar panels, so there are ways to watch a program without gasoline.

But Gnagalé watched all ten videos at home, twice, by borrowing her brother's laptop. And everyone in the family, even the little children, learned to recognise striga, and to understand that it is different from the other weeds, and that people have to pull it up. It is funny that she liked the videos enough to watch them twice with her own family, but not enough to watch with the women's group. (We don't know if this women's group had a field school or not).

She said that she used integrated control, but then corrected herself. She liked the idea of making compost, but they don't have enough water. So they pile up the manure and garbage in a pile and sooner or later they take it to the field.

Gnagalé uses a lot of hand pulling, and she has an innovation. She uses a daba in her right hand to get under the roots, as she plucks up the plant with her left hand. It is a clever adaptation not shown on the videos. In an ideal world when people have documented in-depth FFS experiences and farmer innovations, and all this is available, this would help



tremendously in developing videos. It is the second step of the zooming-in, zooming-out (ZIZO) method which is the hard one: getting an idea of the diversity of applications across contexts (Van Mele, 2006, 2010).

Table 3 summarises farmer experiments with new ideas, after watching the videos.

Table 3: Farmer experiments after watching Fighting Striga videos

Farmer group & village	Compost	Micro-dosing	Hand-pulling	Intercropping	Storing cowpea seed	Varietal testing
Seed producers, Cooproseem Siby	Making good compost in a pile on top of the ground.		After hand pulling place soil over the base of crop to keep striga plants from emerging	Several sorghum with cowpea mixes, with nitrogen. Maize with cowpea & with peanut		
Gneléné women's group Siby			Lots of hand pulling. Uses hoe to avoid breaking striga			
Representatives from several FFS Makanjana	Making compost, but applying it to tomatoes			Experiments with sorghum with cowpea		
Villagers (not organised) Sanambelé					Stored cowpea seed with repellent plant. Mixed chilli powder with groundnut seed in storage to discourage insects	
Some people linked to Mobiom & other neighbours Yorobougoula	Making compost pit. Also making compost on top of the ground	Micro-doses of organic fertiliser on sorghum & cotton		Experiments with millet & sorghum with cowpea		
FFS group (they learned these ideas in the FFS; only one of them saw the video) Nampossela	Good compost controlled striga & raised yields. Less striga germinates		Many use hand pulling & it does control striga	Cowpea with sorghum & with maize lowered the germination of striga	Triple sack to store cowpea seed	
Women's group & other groups Sirakelé	4 people have made compost pits	Micro-doses of compost	The community organises to hand pull striga.		Double sack	
Ben Kadi Yorosso	Good compost stops striga from germinating	Micro-doses of compost	Hand pulling striga			
Farmers that helped make the video on compost Souara	Many make compost pits. They know compost helps control striga		The village does hand pulling	Sorghum with cowpea & with groundnut		
FFS farmer facilitators Gnamana	They learned about compost in the video	Micro dose of mineral fertiliser & urea		Millet with cowpea prevents striga from growing		
People from two FFS & some variety testers Wakoro	Several made compost, but because of a lack of water some made it once instead of twice during the year	Micro-dose of urea, & planting seed closer together. Micro-dose of mineral fertiliser mixed with seed	Uses hand pulling with micro-dose	Sorghum with cowpea	Testing new sorghum varieties Watched video to help select seed. In an FFS they chose 6 varieties. After the film they selected varieties based on yield, resistance to striga & ease of drying	

Rainbow radio

Radio Arc-en-Ciel is a commercial radio station in the small city of Bougouni. They broadcast in Bambara, French and Peulh (the languages most understood in the area, in that order). The station got the DVDs from ICRISAT and broadcast the soundtrack of the first 5 videos in all three languages.

ICRISAT paid the station to air the audio tracks of the videos, to see whether this would spark some enthusiasm. Payment was about 5000 CFA for airing an audio and then having a 15 to 20 minute discussion around it with callers. In total the station received about 30,000 CFA (60 USD).



Yacouba Sogodogo on right

The station announced that people could have copies of the DVD. Listeners began phoning in to the station as soon as the sound tracks started to air, asking questions.

“What sort of questions?”

The broadcasters couldn't really remember, except for one “if compost can enrich our poor soil, what else can we use?” but in general there were so many questions, and so specific, that the staff could not remember them. After all, they are in the media business and are not agriculturalists. They rarely had answers for the callers-in. But the radio people did grasp how much the farmers liked the content.

“The DVDs gave our station some prestige” they said. When they began airing the video soundtracks, many farmers came to the station asking about the DVDs. And since there was so much demand for copies of the DVD, the station gave them first to the people from the most distant villages.

Lost in community radio

The Kafokan (Voice of the People) community radio station got 50 striga DVDs from ICRISAT and (oddly enough) announced them by “word of mouth” i.e. not on the radio, and only two people came in to get copies.

The station had previously asked ICRISAT for 300,000 CFA (600 USD) to “adapt the audios of the videos and make programs around it,” which ICRISAT could not pay. The station does not sell advertising and depends on donations to pay expenses. It seemed like a lack of creativity. A community radio station with hours of free content and a box of free DVDs should be able to make something out of it.

Town Crier Radio

When Liter Sanou saw the striga videos at an ICRISAT/Farm Radio International workshop in Bamako in 2012, he thought that his community, the small town of Yorosso, could really use this new information. Some farmers had cereal fields that had produced nothing but striga for three years.

Radio Shiiñen plays syndicated news in French, and later adapts it into Bambara. Liter began using this window once a week to play the audio track of the striga videos. He played the first eight.

Cell phone with built-in radios mean that for many villagers, for the first time in their life they not only have a phone, but their own personal, portable radio with rechargeable batteries. Even if they don't have electricity, there are stalls that charge phone batteries for a small fee at the weekly fairs and markets in the smaller agricultural towns.



Liter Sanou

So now it is easier for Malians to listen to the radio, and since the listeners have the phone in their hand, they can dial the station while a question still burns in their head, which is what happened to Liter. As soon as he started playing the audio tracks, people began calling in and peppering him with questions, more than he can remember, and more than he could answer, because he is not an agricultural specialist. People asked where they could get the DVDs. And Liter told them they had to write in. People sent pen-&-paper letters requesting copies and at a meeting at the radio station with leaders of farmer organisation, Liter handed out over 20 copies of the DVD to the farmer representatives, with instructions to deliver the DVD to a specific person who had requested it in writing.

A few farmers who live nearby came over to the station to explain how they used the DVD. Touré, who got his copy from Liter, explained that he has a video kit. He invited his friends over to watch it—all men, he confesses—and watched the DVD all the way though over several evenings. He focused on some modules and watched them three times or more “You have to watch them at least three times to really understand them” he explains, even when they are in Bambara. Touré is interested in striga biology and integrated management and in saving cowpea seed. He recalls compost and applying micro doses of it, and hand pulling striga. Before seeing the video he didn't know that striga parasitised a host plant, but now he does.

He made compost himself, but spread it over the whole parcel, because he wanted to really improve the soil in his field. He has confirmed for himself that this eliminates striga germination, and he has also done hand pulling.

Keita doesn't have a video kit, so he took the DVD to a friend's house and watched it on their kit. The women in the family especially liked the part about (how animals eat) the pods from trees. Keita has made compost and applied it in micro dose, even though he only saw the first two modules, not the one on micro dosing. The second video, on integrated striga management, does mention micro dosing, but only briefly. That a farmer would experiment

with a technique that she had just seen in passing on a video suggests that videos really do convey ideas well.

Keita listened attentively to Touré, and then said that now he realised that he needed to do more to share the information. He is the president of a farmers' group, and says that now he wants everyone in the group to see the videos. If they all put their equipment together, they should be able to watch the videos. After all, the group is called Ben Kadi, which means "understanding each other".

In Bambara, Shiiñen means town crier. That image inspires their work.

Liter carefully explained that playing videos on radio is not as effective as watching them, because the images explain so much, which helps explain why so many people call into a radio station with questions (and also because there are a lot of listeners). Touré agreed. He had heard the audio on the radio before watching the videos, and the content is a lot harder to understand without the images, which carry a lot of additional information.

Radio Dièdougou

Radio Dièdougou is in the town of Béléko, in the heart of farming country. As a commercial station that lives from its ads, it pays to know the audience. The station plays the news in French and then translates it to Bambara, Peulh, Bomu and Mianka, all of which are spoken here. It has a journalist for each of these languages. On Fridays the station plays two hours of Muslim sacred music with two hours of Christian hymns on Sundays.



Moussa Traoré

Moussa Traoré, the station manager, knows that in spite of this diversity of language and faith, everyone in the commune of Dièdougou lives off the land. The audience wants to hear about agriculture, and Moussa does his best to oblige them, and has collaborated with ICRISAT, Farm Radio International and others to learn information he can pass on. This contact let Moussa to be chosen as the narrator on the Bambara version of the striga videos. It meant a lot to him when the videos played on national TV and his friends and family heard his voice.

Moussa played all 10 videos in Bambara on the radio. When people called in with questions, Moussa answered the ones he could, but he also phoned Tom's technician Samuel at ICRISAT and patched him in so Samuel could answer questions live on the air.

Moussa also organised many radio talk shows, more than he can remember where the local extension agents from the Service Technique meet with representatives of farmer organisations, with the Chamber of Agriculture mediating. Farmers called in with questions and comments.



Working in a remote village with no electricity or internet, this station uses the striga videos to make its own content

Farmers also call in to demand reruns of the striga videos on the radio. The station has played them all several times.

The station also organised field days in villages around topics like hand pulling striga and then interviews people and records them explaining things like “When you use manure it is important to let it compost completely, otherwise you may be taking seeds of striga back to your field.” Moussa edits these into 5 minute segments which he saves on his hard disk and plays again from time to time.

It’s a remarkable achievement for a radio station in a village with no electricity and no internet. The station runs on solar panels.

Monday is market day and many people come to the village and so on two evenings during the nine-month Farm Radio project Moussa set up the TV in front of his station and played all 10 videos all in one go, to encourage the buyers and sellers to watch the videos. “That’s about two hours,” the team suggests.

Moussa shrugs in agreement, but it’s not a problem. People sit and watch the whole run. So many people come that sometimes they break the benches they sit on. Moussa stops after each video and takes questions from the audience.

All of these activities are in addition to the formal distribution that Moussa does for Farm Radio, distributing DVDs in villages and organisations and organising video viewings. During the nine-month Farm Radio project he showed the videos in a village twice a month. During each viewing 20 to 50 people watched the videos, for a total of about 900 people. In three “witness villages” they showed the videos to 300 to 400 in each village, for a total of about 1,200 people, and a grand total of over 2,000 people, in all villages.

In summary, this is a commercial radio station. Farmers demand content on striga. Moussa uses the videos to make more content, e.g. by field days and talk shows. As an ICT, cell phones allow interaction in several ways. Farmers call in to

- ask questions while the sound track plays
- to join the radio talk show
- to demand more striga shows.

Also, the station can use phones to contact experts. The cell phone allows the station to interact closely with its audience, instead of just broadcasting to them.

Discussion and conclusions

ICRISAT did a superb job distributing the DVDs (about 10,000 copies in Mali) and kept names and addresses and phone numbers of the organisations that got the DVDs. ICRISAT also gave the recipients forms to fill out to document when and where they screened the videos and who got copies. This is in sharp contrast to Uganda, where the larger partners didn’t really get the DVDs to the villagers that needed them. But ICRISAT is an international research organisation with a keen interest in striga control and achieving impact, not a struggling national organisation with little prior involvement in making and using videos.

The striga videos are pretty darn good. Earlier videos shown in Benin, Uganda and Bangladesh were good too, but the striga videos had the scientific backing of ICRISAT's and its partners multiple years of research on striga, cadres of FFS farmers who could go on camera and the Agro-Insight film crew which by 2011 had more years of experience.

The farmers were quite impressed by the little animation in the videos, which shows how striga seeds germinate and attach themselves to the roots of a cereal crop (or die, if germination is stimulated by a legume, cotton or tobacco crop). If all 10 videos are a set, the Striga Biology video is like the background biology and ecology that help the farmers understand how control options work, and it also gives them clues to adapt those options to their local circumstances(see Bentley and Boa 2013).

Radio stations in Mali broadcast in local languages, often two or more, while their listening audience has grown thanks to the radios built into cell phones. Some of the radio stations organised video screenings, besides playing the sound track on the air. This is the first country where this has been documented. In an earlier study in Benin, radio stations did not screen the videos for farmers, but used the audio tracks in creative ways and invited farmers to come and collect a copy of the DVD (Okry 2013).

Effectiveness of the videos is evident from the many changes in practices observed. In each of the farmer groups visited farmers tried out new ideas from what they had learnt from the videos. Compost-making, intercropping, micro-dosing and hand-pulling were frequently adopted, whereas many farmers also mentioned new ways of storing their cowpea seed. Farmers are not passive observers, and are very sensitive to observe social dynamics presented in videos. Like with the parboiling rice video, which never intended this to be so, but by showing a small group of women doing the job together this had a great impact on women deciding to no longer process the rice individually but rather in a group (Zossou 2010). In this study in Mali, farmers were quick to notice that striga weeding can be effectively done in groups, and started organising themselves to do so. There are several accounts from Niger where the "joining hands against striga" video sparked similar dynamics to the extent that even special village days were organised to hand-pull striga. All farmers learnt from the videos that the battle against striga can only be won when they join forces and apply many technologies together.

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