Development in Practice

ISSN: 0961-4524 (Print) 1364-9213 (Online) Journal homepage: http://www.tandfonline.com/loi/cdip20

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To cite this article: Espérance Zossou, Davo Simplice Vodouhe, Paul Van Mele, Afiavi Rita Agboh-Noameshie & Philippe Lebailly (2015) Linking local rice processors' access to rural radio, gender, and livelihoods in Benin, Development in Practice, 25:7, 1057-1066, DOI: 10.1080/09614524.2015.1069261

To link to this article: http://dx.doi.org/10.1080/09614524.2015.1069261

Development in Practice, 2015
Vol. 25, No. 7, 1057–1066, http://dx.doi.org/10.1080/09614524.2015.1069261

Routledge
Taylor & Francis Group

Linking local rice processors' access to rural radio, gender, and livelihoods in Benin

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(*Received September 5, 2014; accepted June 1, 2015*)

In a context of low literacy rates and a high level of rurality, the use of rural radio in agricultural extension is a method that can bridge the gap that exists between researchers, extension workers, and farmers. This article examines the level of farmers' access to rural radio in relation to gender and livelihoods. The study was conducted in Benin with 18 rural radio stations and 240 rice processors, using the sustainable livelihoods framework to examine the relationship between access to rural radio and livelihoods. Although the study cannot draw conclusions on causal relationships, rice processors who often listened to agricultural broadcasts had better social, financial, and human capital stocks compared to those who did not. Despite the efforts of 72% of the radio stations to link up with extension services, half of the rice processors rarely or never listened to agricultural broadcasts, because the timing of the broadcasts was inappropriate. Interactive radio sessions with farmers that involve government officials will need to address this if they are to become more effective.

Dans un contexte de taux d'alphabétisation faible et de ruralité considérable, l'utilisation de la radio rurale dans la vulgarisation agricole est une méthode qui peut réduire l'écart entre les chercheurs, les vulgarisateurs et les agriculteurs. Cet article examine le degré d'accès parmi les agriculteurs à la radio rurale par rapport au genre et aux moyens de subsistance. Cette étude a été menée au Bénin avec 18 stations de radio rurales et 240 usineurs de riz, en utilisant le cadre des moyens de subsistance pour examiner le rapport entre l'accès à la radio locale et les moyens de subsistance. Si l'étude ne permet pas de tirer des conclusions sur les rapports causaux, les usineurs de riz qui écoutaient souvent les émissions de radio avaient de meilleurs stocks de capital social, financer et humain que les autres. En dépit des efforts de 72 % des stations de radio pour nouer des liens avec des services de vulgarisation, la moitié des usineurs de riz écoutaient rarement, voire jamais, les émissions agricoles, parce que les horaires des émissions ne leur convenaient pas. Les sessions radio interactives avec les agriculteurs qui font intervenir des représentants du gouvernement devront résoudre ce problème pour améliorer leur efficacité.

En un contexto de bajas tasas de alfabetismo y de alto nivel de ruralidad, el uso de la radio rural para fines de extensión agrícola constituye un método que permite remontar la brecha existente entre investigadores, extensionistas y campesinos. El presente artículo examina el nivel de acceso de los campesinos a la radio rural en relación al género y a los medios de vida. El estudio se llevó a cabo en Benín, participando en él 18 radioemisoras rurales y 240 procesadores de arroz. Se empleó el marco de medios de vida sostenibles, con el fin de examinar la relación existente entre el acceso a la radio rural y los medios de vida. Aunque el estudio no llega a conclusiones respecto a la existencia de una relación causal, es más frecuente que aquellos procesadores de arroz que escuchan radioprogramas agrícolas tengan

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más activos sociales, financieros y de capital humano, en comparación con los procesadores que no escuchan dichos programas. A pesar de los esfuerzos realizados por 72% de las emisoras de vincularse con los servicios de extensión, la mitad de los procesadores casi nunca, o nunca, escuchan los programas agrícolas, debido a que la hora en que se difunden no es apropiada. Resulta necesario que los programas radiales interactivos en los que participan campesinos y funcionarios gubernamentales atiendan esta problemática para ser eficaces.

Keywords: Technology – Media; Gender and diversity; Environment (built and natural) – Agriculture; Sub-Saharan Africa

Introduction

The traditional methods of transferring and disseminating agricultural technologies are proving insufficient in today's global context (Cho and Bland 2002; Rivera and Zijp 2002). Efforts to improve agricultural extension have focused on innovations in communication to improve interaction between research, extension, and farmers and to encourage a greater sharing of information. The use of radio appears as an opportunity for agricultural extension in developing countries (Chapman et al. 2003), and it is therefore important to investigate rural people's access to the rural radio using disaggregated data on gender and livelihoods.

In developing countries radio is the most popular and accessible mass medium, and the main vector of information rooted in people's habits (Niang 2001; Edah 2002). Radio plays a significant role in the transfer of information in African countries because use of the spoken word helps where literacy rates are low (Hambly Odame and Atibila 2003; CTA 2006). The growth of rural radio stations over the past few decades reflects the increased investment in these information technologies (Chapman et al. 2003).

In sub-Saharan Africa, radio is often the only mass medium available in rural areas and most households have access to a receiver (Girard 2003). In technical terms, rural radio is defined in terms of broadcasting to a rural audience within a relatively local range (25–50km radius) or functioning at frequencies of less than 1000MHz. In some cases, rural radio stations using larger transmitters (e.g. 5000 watts) can technically reach millions of listeners (Hambly Odame and Atibila 2003). There are three different types of rural radio services: public, private/commercial, and community (Farm Radio International 2008). Community and associative radio are often the only types of stations that broadcast in minor languages and in remote areas. The benefits these rural radio services bring are difficult to measure, but include information and agricultural knowledge sharing (Farm Radio International 2008). Most rural radio stations have been established by international agencies, NGOs, or governments expressly for development purposes (often not agriculture-oriented), and therefore inherently supplement other rural services. Many rural radio stations have weak capacities for agricultural broadcasting and lack the skills to search, manage, and use the burgeoning information available for practical poverty-reducing outcomes (Chapman et al. 2003).

Benin is a country characterised by rurality (58% of population), where 66.4% of the population is illiterate (ONU 2011). The press therefore struggles with language difficulties and cannot reach the majority of people. Thus, rural radio services appear more appropriate as they broadcast in the local language. This is an opportunity to strengthen research–extension–farmer linkages. Agricultural extension could benefit from both the reach and the relevance that local broadcasting can achieve (Chapman et al. 2003). This study therefore sought to investigate the interactions between access to rural radio, gender, and livelihoods in Benin Republic.

Methodology

The study was conducted in the northern and southern parts of Benin. Benin Republic is a West African country located between the Equator and the Tropic of Cancer, 114,763km^2 in size and with a population of around 10 million (of which 51.2% were female). The country is divided into 12 departments (five in the north and seven in the south), subdivided into 77 communes that are further divided into 546 districts with 3,743 villages and city neighbourhoods. A process of administrative decentralisation to support self-community development is ongoing. The southern population represents 60.3% of the total population with high population density compared to the north of the country. The dominant economic activity in the country is agriculture, which occupies about 47.1% of the workforce (INSAE 2013).

Using a semi-structured interview guide, we interacted with rural radio station managers, hosts, marketing managers, and/or founders of a total of 18 rural radio stations (10 southern and eight northern), based on their willingness to meet the research team during the field survey period. The interviews were conducted to gather information on their programme content, broadcast schedules, and their interactions with researchers and extension agents. We then interacted with rice processors in 12 randomly selected villages around the surveyed rural radio stations (six each in both north and south) using structured questionnaires. In each village, we first collected qualitative data through focus group discussions to get an idea of the rural radio stations listened to, the role of these radios in agricultural extension, and the overall description of the five sustainable livelihood capitals (natural, human, social, physical, and financial). Based on in-depth insights from this qualitative research phase, we formulated a structured questionnaire which was individually administered to 240 randomly selected rice processors (20 per village). After the structured interview, we used the sustainable livelihoods framework on a sub-sample of 120 randomly selected rice processors (10 per village) to obtain each rice processor's capital stocks. The respondents rated the capital stocks identified for the surveyed year on a 0–5 scale. A spider diagram was then drawn to visualise the five capitals, with 0 value (no stock) at the centre of the diagram and value 5 at the other extreme of the axes, corresponding to a full satisfaction. Tables and graphs were made with the median capital rating values to make the differences visible between men and women and those who listened to and did not listen to agricultural broadcasts. The Mann-Whitney test was used to appreciate the difference between groups.

Results and discussion

Rural media and agriculture

About 72% of the surveyed rural radio services have institutional contracts with the Ministry of Agriculture, especially extension agents and sometimes scientists to make radio broadcasts on agriculture. About 40% of their monthly programmes relate to agriculture and the environment. Apart from their collaboration with the Ministry of Agriculture, rural radio stations have programmes on development issues with local NGOs and development agencies and donors such as United Nations Educational Scientific and Cultural Organization (UNESCO), The European Commission (EC), Centre Technique de Coopération Agricole et Rurale (CTA), The Food and Agriculture Organization of the United Nations (FAO), the United Nations Children's Fund (UNICEF), the International Development Research Centre (IDRC), and the Canadian International Development Agency (CIDA). Table 1 describes the rural radio stations visited.

Radio broadcasts on agriculture are either deferred or live. Live broadcasts are often interactive and well appreciated by farmers because they have the opportunity to phone in and intervene during the broadcast. This interaction makes live radio programmes on agriculture more

Table 1. Characteristics of radio stations visited during the survey.

Denomination	Localisation	Type of rural radio	Estimated people reached
Plateau FM	Pobè, South Benin	Private/commercial	629,881
FM Alakétou	Kétou, South Benin	Community	1,345,803
Radio Adja-Ouèrè	Adja-Ouèrè, South Benin	Private/commercial	-
La voix de la Vallée	Adjohoun, South Benin	Community	284,213
Ahémé FM	Possotomè, South Benin	Community	554,478
Mono FM	Lokossa, South Benin	Private/commercial	483,946
La voix de Lokossa	Lokossa, South Benin	Private/commercial	-
Couffo FM	Azovè, South Benin	Private/commercial	-
Radio rurale de Lalo	Lalo, South Benin	Public	555,662
Radio Tonassé	Covè, South Benin	Private	-
Radio rurale Ouaké	Ouaké, North Benin	Public	33,695
Radio rurale Tanguiéta	Tanguiéta, North Benin	Public	163,108
Nanto FM	Natitingou, North Benin	Community	68,869
Kuffè FM	Bassila, North Benin	Community	126,379
Nonsina FM	Bembereke, North Benin	Community	474,174
Kandi FM	Kandi, North Benin	Community	140,640
Bani Ganse	Banikoara, North Benin	Public	179,769
Fara'a	Gya, North Benin/Niger	Private/commercial	-

participatory. The participation of farmers in agricultural extension is very important and the level of this participation largely determines the success of any sustainable development programme (Axinn 1997). But rural radio hosts often deferred agricultural radio broadcasts for scheduling reasons, especially when they need to involve resource persons for appropriate and reliable information. The local agricultural extension agents/workers revealed that they collaborate with rural radio stations in order to reach millions of illiterate farmers and provide them with information relating to all aspects of agricultural production, processing, and marketing in their local language. Extension services have been criticised both for failing to reach the majority of farmers in many developing countries and for failing to communicate successfully with those that fall within range (Rivera and Zijp 2002; Chapman et al. 2003; Van Mele, Salahuddin, and Magor 2005). Partnerships between farmers, extensionists, and researchers can help to develop new knowledge, skills, and attitudes towards collaborative learning. However, in most cases this requires considerable effort, as communicating agricultural topics involves multiple skills and a positive mindset towards working with farmers. The main constraints expressed by the surveyed rural radio stations were the need for capacity building on agricultural subjects and the insufficiency of agricultural research material such as broadcast scripts on agricultural subjects to support the range of topics requested by farmers. Capacity building featured strongly during discussions with the staff of the rural radio stations sampled for the survey. They said that:

> "our major constraint in achieving the objectives of radio programmes on agriculture is the insufficient knowledge in agriculture and many technical elements escape us. This forces us to collaborate with agricultural experts from Benin Ministry of Agriculture, farmers' organisations, NGOs, research stations, extension services, etc., for the implementation of radio programmes on agriculture. But the challenge we face is the non-availability of these experts when needed. Therefore we need to develop our capacity on agricultural journalism and have the necessary knowledge to deliver appropriate and reliable information."

Another point to be considered when making radio programmes on agriculture is the need to avoid the use of terms that may create confusion and misunderstanding among listeners.

This is very important, given an experience recounted by Zossou (2013) in a village named Houêda in southern Benin. As part of the field experiments of her doctoral research, rural radio "La Voix de la Vallée" broadcasted a programme on good practices to adopt for good quality rice. Rice farmers, after listening to the radio programme, had the impression that the radio hosts had exposed the low quality of their production rather than explaining in depth the good practices to adopt. Fortunately, the programme was broadcasted in collaboration with a resource person who was a development agent from the Benin Ministry of Agriculture with whom the village rice producers were already in contact. They approached him to express their discontent. The issue was resolved by providing more clarification on the subject of misunderstanding during a subsequent radio broadcast. This experience shows that while rural radio is a useful tool for agricultural extension, it must be used with great caution as it is primarily based on hearing and is much less illustrative. Van Mele, Wanvoeke, and Zossou (2010) and Zossou (2013) present some ways in which farmer-to-farmer video can strengthen the knowledge, confidence, and efficiency of radio hosts to make broadcasts on agriculture. Radio scripts were developed from farmer-to-farmer videos that were made using participatory approaches with rice farmers on pre-harvesting and post-harvesting activities. These scripts were used to support rural radio broadcasters. In addition to the radio scripts, rural radio hosts have previewed videos before making radio broadcasts on particular topics. The use of scripts developed from farmer-to-farmer videos, and the previewing of the videos before making broadcasts, help rural radio hosts to better understand the topic and give farmers relevant information. This highlights the potential role of farmer-to-farmer video (made with participatory approach) as a support to rural radio. Future efforts need to seek synergies between various media.

Access of rice processors to rural radio

Socio-demographic information

Rice processors are mostly women (67% of the sample). The majority of processors are married (100% of men and 92% of women), and most are illiterate (87% of women and 53% of men). Households have on average about eight individuals. The dominant religion in the north is Muslim (100%) and Christian in the south (61.7%).

Ownership of radio in relation to gender

Among the local rice processors, more men (87.3%) have their own radio set compared to women (66.5%). The main reason for men who don't have their own radio set is the lack of financial resources. Two main reasons explain why women don't have their own radio: (i) lack of financial resources; and (ii) that the most literate member of the household would appropriate the radio if the women bought one (Table 2).

Table 2. Reasons why rice processors do not have their own radio set.

Reason	Women (n=54)	Men (n=10)
	Percentage	
Lack of financial resource to buy the radio	38.9	60.0
The household's literate member will appropriate the radio	38.9	40.0
I don't know how to use a radio	22.2	0.0

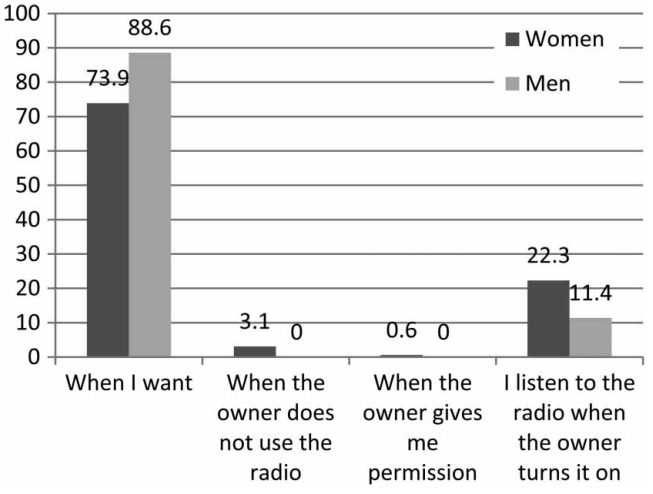

Figure 1. Level of rice processors' access to radio according to gender.

The most literate members of the households are often the husbands or the children. Among those who did not have their own radio set, about 90% of women and 60% of men listened to their parents' radios, and 10% of women and 40% of men listen to their neighbours' radios.

Figure 1 shows that men and women have good access to radio. Men have more access compared to women, because more men have their own radio compared to women.

Listening to rural radio broadcasts on agriculture

More men (63.3%) than women (52.2%) listen to rural radio broadcasts daily (Figure 2). This can be explained by the fact that men are more likely to own a radio than women. Moreover, women are more occupied in rural areas than men. In addition to farming activities, women manage many domestic activities such as cooking, taking care of the children, etc.

With regard to listening to agricultural broadcasts (Figure 3), there was no gender dependence (Pearson $\chi^2 = 0.2599$ and $p > 5\%$).

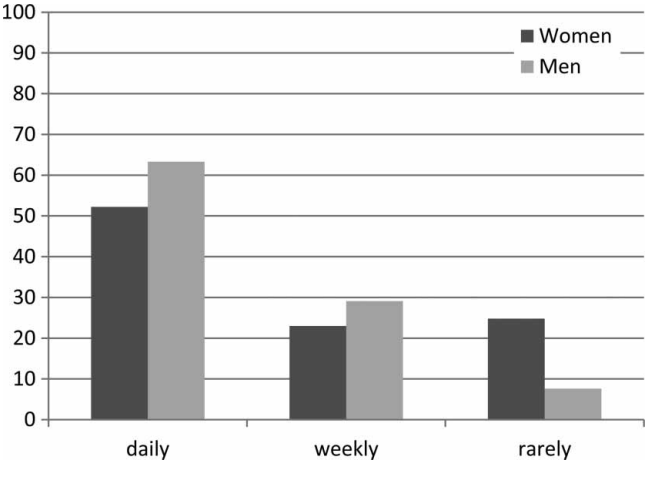

Figure 2. Frequency with which rice processors listen to rural radio broadcasts in general.

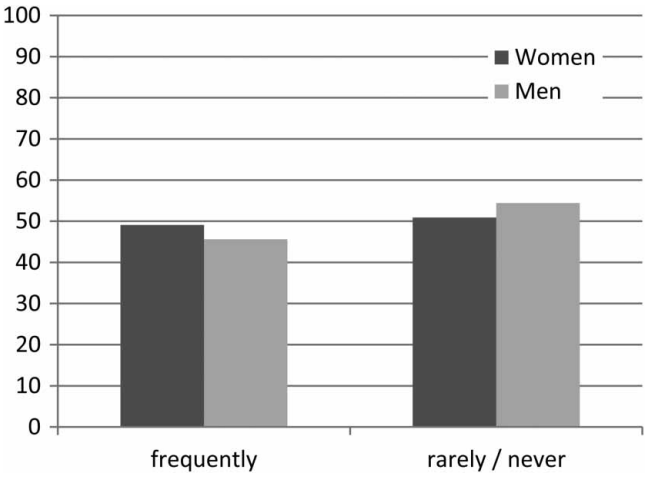

Figure 3. Frequency with which rice processors listen to rural radio programmes on agriculture.

The major reason that explains why rice processors rarely or never listen to radio programmes on agriculture is the inappropriateness of broadcast schedules (Figure 4).

Concerning the appropriate time for processors to listen to the agricultural programmes on the radio, the majority proposed 8–9 pm because they are often busy during the whole day. It is therefore important that the radio stations and rural development agents consider the issue of agricultural broadcast schedules. Rice processors who listen to radio programmes on agriculture confirmed that the programmes are very interesting.

Radio programmes on agriculture, gender, and livelihood assets

The sustainable livelihood approach was used with 120 randomly selected rice processors. Most were women (67.5%).

Figures 5 and 6 and the Mann-Whitney test show that rice processors who often listen to radio programmes on agriculture have better financial, social, and human capital compared to those who rarely or never listen to radio programmes on agriculture. Our study implies that in particular, wealthier and better connected rice processors listen to agricultural radio broadcasts, so future

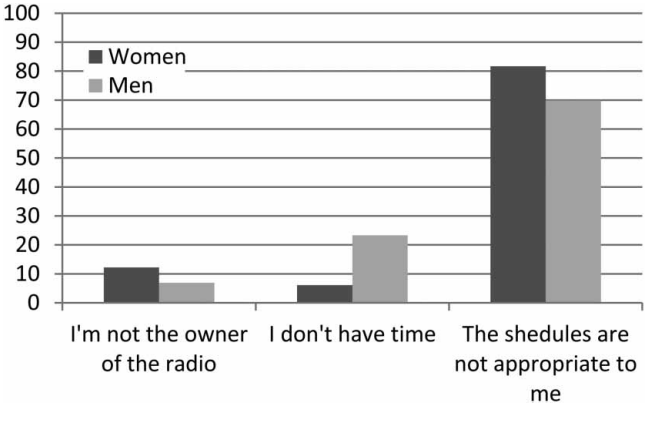

Figure 4. Reasons why rice processors rarely or never listen to radio programmes on agriculture.

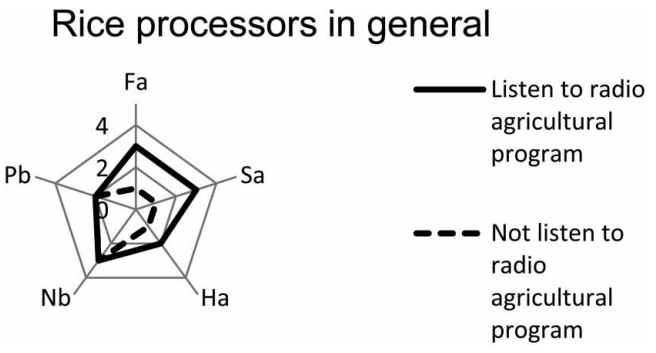

Figure 5. Capital stocks recorded for rice processors according to whether or not they listen to rural radio programmes on agriculture.
Notes: F = Financial capital S = Social capital H = Human capital N = Natural capital P = Physical capital. a = Mann Whitney test significant ($p \leq 0.05$); b = non-significant Mann Whitney test.

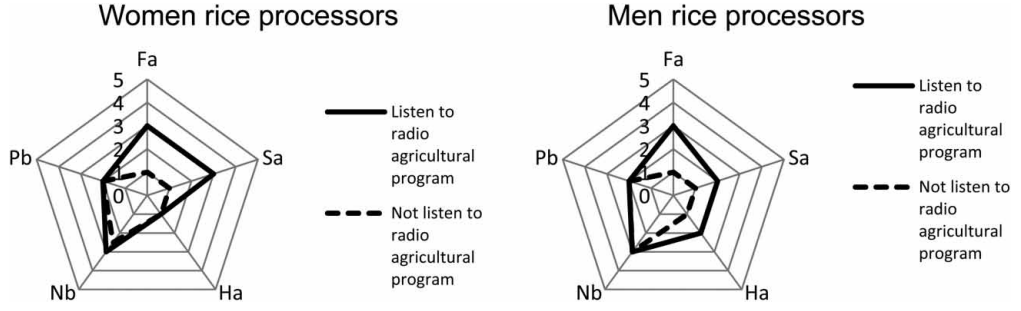

Figure 6. Gender dimension of capital stocks recorded for rice processors according to whether or not they listen to rural radio programmes on agriculture.
Notes: F = Financial capital S = Social capital H = Human capital N = Natural capital P = Physical capital. a = Mann Whitney test significant ($p \leq 0.05$); b = non-significant Mann Whitney test.

interventions and studies need to pay attention to social inclusion issues. The extent to which rural radio can trigger behavioural changes in agricultural practices among non-listeners and different strata of society will also need further investigation.

Conclusion

Rural radio can be an extension tool to reach millions of illiterate farmers and provide them with information relating to all aspects of agricultural production, processing, and marketing in a language they understand. But most rural radio stations expressed concerns that they did not have sufficient agricultural knowledge in order to deliver appropriate messages. Although partnerships with government staff from research and extension services partly helped to address this issue, interactivity with farmers needs to be revised as the majority of surveyed rice processors could only listen to the radio in the evening, between 8 and 9 pm. Expertise could be drawn from other sources, such as from farmers within their own or other rural communities, and from farmer-to-farmer training videos. As noted by Hambly Odame (2003), participatory radio campaigns are widely listened to and can have a significant measurable impact on

knowledge and practice in farming communities. To be more effective in agriculture, rural radio stations should take the context of their listeners (farmers in particular) into account when they develop and deliver their programming, as well as exploring the potential to develop their programming in collaboration with these listeners. With regard to the issue of broadcast schedules, future partnerships between rural radio stations and agricultural research and development staff need to take into account the timeframe proposed by farmers. This will enable more farmers to listen to radio programmes on agriculture and development and increase impact.

Acknowledgements

We are grateful to Felix Houinsou for his support during the field research.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This study was financed by the Belgian Technical Cooperation (BTC), the International Foundation for Science (IFS) through grant S/4999–1, and the Government of Japan who kindly supported AfricaRice's post-harvest research and integrated rural learning approach.

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