**Literature Review: Women and ISFM adoption in Mali**

Mailloux L., Gariepy, J., Cheng, L.

Throughout the previous decade, extensive literature has emerged regarding the need to acknowledge gender differences in development initiatives and the need to develop programs that specifically target women. Entrenched gender norms perpetuate the disadvantaged socioeconomic situation of women and their access to important agriculture innovations.

The purpose of this literature review is to consider these factors when adopting integrated soil fertility management (ISFM) in rural Mali. More specifically, it will look at what role gender plays in adopting and implementing ISFM practices and what techniques should be considered when planning training sessions to ensure that women and men have equal access to ISFM techniques and information. As little research has been done on this in Mali, examples and best practices will be drawn from other regions in Africa and communication strategies from other agriculture and rural initiatives are included.

The literature review begins with an overview of Mali living conditions and its agriculture sector and the division of labour in rural areas of the country. This is followed by a more in-depth look at the adoption of ISFM in Mali and other areas of West Africa. Next, we provide a discussion on how gender fits into agriculture and more specifically ISFM. Finally, we discuss best practices and promising techniques for working with Malian women, who have much lower access to training than men in agric**u**lture. Overall, the literature reveals that developing effective means of communication to reach rural farmers in Mali is critical.

**The importance of gender in Mali**

Mali is ranked 148th of out 152 countries the 2013 Gender Inequality Index (GII), indicating that its gender-based disparities are among the largest in the world. Although the constitution of the Republic of Mali accords women equal rights with men (FAO, 2013); in practice Mali remains a strongly traditional society and “living conditions for women are systematically worse than for men” (FAO, 2013).

**Agriculture and the division of labour in Mali**

Agriculture is very important for the Malian economy. In 2008, this sector accounted for 37 percent of its GDP, and in 2010 over 70 percent of the Malian population was engaged in agricultural activities. Population growth has put significant stress on the country’s natural resources and has diminished the availability of fertile soils. In addition, climate change appears to be contributing to a decrease in rainfall and longer dry seasons (CARE, n.d). This combination, along with other factors, has resulted in a largely poor and malnourished population (29%).

In Mali, agriculture is dominantly characterized by subsistence rain-fed farming undertaken by single households. Most rural farmers have limited access to land and in 2011 approximately 68 percent of farmers cultivated plots under 5 hectares. According to IFAD, “most farms are ill-equipped to adopt modern practices, and farmers do not have access to credit to make the necessary investments” (IFAD, 2011). In addition, the use of agricultural inputs and mechanization is very limited. Traditional practices and population growth have put enormous stress on Mali’s, and much of Africa’s soils. Constant population growth has diminished the availability of land and has forced farmers to repeatedly plant crops on the same land (IFDC, n.d).Consequently, this has resulted in lower yields and reduced incomes which have subsequently led to poverty and smallholder farming families (IFDC, n.d).

In Malian farming communities both women and men hold important and complimentary roles in agricultural and trade-based activities (Every Culture, n.d). Women smallholders represent 100 percent of the agricultural labour for irrigated vegetable gardens and approximately 30 percent of the labour for rain-fed agriculture. Despite their contributions, Malian women are constrained by the country’s patriarchal society and are often restricted from significant gains in the sector. In addition to working on staple and cash crops, women grow crops such as peas, herbs and groundnuts to complement the staple crops and to meet the household`s nutritional needs. Their level of productivity is often limited by their large workloads and multiple responsibilities, including labouring on family staple crops or husbands’ or fathers’ cash crops, care-giving and preparing meals at home, collecting water, firewood and wild foods (to supplement diets), cleaning, and managing large households (CARE, n.d). In terms of trade, while men are more concerned with manufactured goods, women are often limited to less lucrative economic activities, namely selling food items and minimal manufactured goods (e.g. cloth) (Every Culture, n.d).

**Agriculture in the Sahelian Drylands:** Applying ISFM techniques in Mali is particularly challenging as a large portion of its agricultural activities take place within the Sahelian Dryland, which refers to an agriculture belt vulnerable to severe and cyclical droughts that stretches between Senegal and Sudan. The unfavourable soils and low nutrient reserves in this area present a challenge in terms of practicing ISFM. Agriculture in this area is also constrained by the impacts of semi-nomadic pastoralism combined with overgrazing which has led to extensive land degradation and desertification.(Sanginga and Woomer 2009) Approximately, 20 million people are still affected by food insecurity in the [Sahel](http://www.fao.org/emergencies/crisis/sahel/en/), and are likely to see their situation deteriorate rapidly in 2015 as 2014 was characterized by poor harvests and pasture deficits. (FAO 2015)

**ISFM and women**

In order to address the country’s agricultural challenges, innovative strategies such as ISFM are being encouraged in Mali. The implementation of ISFM by small-scale farmers in Mali, as elsewhere in Africa, generally involves all household members (Sanginga & Woomer, 2009). However, the country’s cultural context and embedded gender norms create issues in terms of integrating all members of the community equally into these projects. Literature on promoting and integrating ISFM practices reveals that training sessions must be carefully designed to meet the needs of the community and to ensure that all members are able to benefit from its adoption.

Due to complex dynamics within the Malian society and household, women are oftentimes excluded from agricultural programs. These factors, combined with the fact that women often have different roles in agricultural and have access to less resources, emphasizes the need for programs to adopt a gendered lens. For example, in Mali men cultivate more land than women and have more access to farm assets. Women do not have access to same quantity of manure as men as they are generally responsible for smaller livestock and thus have to rely on inorganic fertilizer (Sanginga & Woomer, 2009). Men also cultivate in the primary rain-fed agricultural season with access to irrigation. In comparison, women mostly cultivate in the dry season on smaller plots, on land generally accessed through their husband or husband`s lineage, where they only have access to some well water or naturally irrigated, often flooded, low lands (Dillon, 2014).Women mostly cultivate in the dry season as they are occupied with domestic tasks during the harvest; the dry season offers more time for income earning opportunities. Furthermore, Malian women are often not comfortable and/or are not able to participate in training and workshops alongside men. Therefore, unless specific efforts are made to integrate them into training, women tend to benefit less than men from agriculture training. This is the case for cash or major staple crops, for which men have a primary responsibility.

In Mali, there are several factors that limit smallholder farmers’ ability and desire to invest in ISFM, including “weak access to fertilizer credit, insufficient flows of information and training to farmers, as well as inadequate policies” (Sanginga & Woomer, 2009).These challenges, while significant for all smallholders, are generally greater for women than men. Women tend to be limited by entrenched gender inequalities and generally only inherit poor quality land that is not very fertile (OECD, n.d). In practice, both men and women face difficulties in accessing agricultural inputs but entrenched social and economic roles and receiving access to land and credit remains “notoriously more difficult for women” (FAO, 2013). According to IFDC “even when women are able to get access to land, it is often of poor quality and they lack the financial resources, inputs, or support to improve its productivity” (CARE, n.d).Another factor that disproportionally impedes women in getting access to agricultural inputs is mobility. If and when women access agricultural inputs it is usually a result of a man physically getting the input on her behalf. However, this is not limited to Mali.

Studies conducted across the African continent indicate similar factors and barriers that limit women’s prospects for accessing agricultural services and information and adopting ISFM (World Bank, n.d). It is generally more common for men to participate in farmers’ organizations and commercial networks than women, meaning men generally receive all firsthand information. Moreover,agriculture and natural resource extension workers often speak only to men, assuming that the men will convey information to women (World Bank, n.d). The World Bank notes that “male relatives often mediate women’s access to information, markets, and credit”, this lack of direct and accurate information impacts women’s productivity. For example, in the Malian village of Zamblara, similar to most villages in this region, women farmers face several barriers and hardships. In Mali, “women are rarely considered equal to men in social and economic status. There is a gender bias at all levels of society, and the agricultural sector is no exception (Wanvoeke, Maiga, Yattara, & Van Mele, 2008).These challenges are exacerbated by women’s inability to inherit or own land and gain access to labour and cash (De Groote and Coulibaly, 1998; Grigsby, 2004).

In addition to these limitations, natural resource management programming continues to remain highly gendered with most initiatives and strategies specifically targeting men (World Bank, n.d). As a result, technological advances that have significantly improved agricultural productivity over the previous decades have largely bypassed women farmers and consequently reduced their productivity (World Bank, n.d). Sanginga and Woomer (2009) note that rural development initiatives implemented in the previous decades have been largely male-oriented and have often overlooked the particular positions and tasks women could perform. According to the same source, “approaches that link farmers to markets that do not account for gender in terms of access and outcomes are likely to compound existing inequalities”. African women face several constraints in engaging with market systems which generally results in less access to capital (revenues from sales of agricultural outputs). Their activities are often limited to subsistence production and local markets.

According to the literature, unequal gender norms along with the women’s socioeconomic situations are the main factors influencing women’s ability to implement ISFM. According to Sanginga and Woomer (2009), studies that indicate that African women are less likely to implement farm technologies are often misdirected when they do not acknowledge the inherent disadvantages they face. They argue that “both traditional value systems and their modern distortions force women to become household providers rather than income earners, in large part because men retain control over cash crops despite women’s help in their production. Some misconceptions are based upon women’s wiser decision making as when they readily substitute organic inputs for fertilizers or they demonstrate reluctance to accept credit when they fear that needed household food reserves will be sold in order to service loans” (Sanginga & Woomer, 2009).As women are often the household providers they are generally more concerned with the immediate household wellbeing and have different priorities and attitudes towards new technologies and their adoption. For example, Sanginga, Kaaria, and Muzira (2007) in their study of whether increased access to markets increases farmers adoption of ISFM technologies, found results varied across gender and socio-economic status. The authors compared investment priorities among farmers from different wealth categories and gender in Malawi, Uganda and Tanzania. Their research revealed that in most cases, women across all wealth categories did not categorize investing in agricultural inputs as their top priorities compared to their other livelihood needs such as buying or renting agricultural land or livestock, paying school fees, and buying clothing. On the other hand, men in all socioeconomic categories often prioritized investments in agricultural inputs. Both gender and socioeconomic status influenced decisions to implement integrated soil fertility management.

Understanding Mali’s gender context and acknowledging women’s position and roles within the house and community will certainly contribute to the effectiveness of implementing initiatives such as ISFM and working with rural Malian women. Examples drawn from other areas in Africa emphasize the importance of designing programs and training that specifically target women. For instance, in Nederlof and Dangbégnon’s (2007) examination of an ISFM project carried out from 1999-2003 in Togo, it was found that there had been very poor participation of women in the project, despite the fact that women carried out most farm activities in these communities. The project partners had attributed this lack of women’s participation to the patriarchal socio-cultural context. Women did not participate in community and project meetings when men were present. Thus, women did not have first-hand access to information about ISFM techniques. An example is given of a woman who experienced lower soybean yields using ISFM techniques compared to her traditional methods because she received a second-hand explanation of how to sow a soybean plot from her husband who had heard it from the extension agent. According to the women in a 2012 case study in Mali, “men share knowledge with other men but do not share knowledge with them or help them get inputs. Men are members of the cooperative but women are not. Women have their own associations or groups but it’s mostly for saving. They said they don’t have confidence in men and don’t feel comfortable in mixed groups with men” (Gender Case Study, 2012). However, another group of women indicated that when training was directed directly at them and the crops women grow, they were receptive and adopted the techniques they were taught, as long as the inputs were available locally, such as organic and inorganic inputs. Gender-specific material is particularly valuable for reaching and integrating women. These materials should be developed around topics most pertinent to women (e.g specific crops that are most beneficial for women to cultivate) and include tasks and activities that are relevant to their roles and responsibilities. Case studies from Sub-Saharan Africa reveal farmer field schools have been successful in several countries in the region as the flexible training schedules and locations can better accommodate women`s needs and lifestyles. A study of farmers conducted in Kenya, Tanzania, and Uganda found that these programs, which incorporate gender-specific materials resulted in significant increases in per capita agricultural income and agricultural productivity of female-headed households (World Bank, 2014).

The literature suggests that several measures must be implemented to improve women’s ability and desire to engage in ISFM. In 2013, the African Soil Health Consortium released a film that highlights four obstacles the adoption of ISFM practices that affect women in particular. The film stresses that it is insufficient to just provide women with the technical skills for ISFM and expect that these practices will be integrated into their farming activities. Rather, gender issues from training to access to markets need to be considered. First, women’s needs for training and advice must be met. Second, extension methods and content must be adapted for women, including providing female extension service agents. Third, women must have access to land, inputs, and credit. Finally, women need access to markets and training on how to capitalize on profitable opportunities.

**Effective communication methods for improving women’s participation**

Developing effective means of communication to reach rural farmers in Mali is critical. According to the literature “the low level of literacy among smallholder farmers in sub-Saharan Africa has been identified as a major constraint to effective communication and dissemination of soil fertility information thus acting as a major impediment to its access by farmers” (Adolwa, Okoth, Mulwa, Esilaba, Mairura & Nambiro, 2012). Although both men and women require training in ISFM, differences in literacy levels means the communication needs of these groups are distinct. For example, literacy rates among Malian women are much lower than men, with women reaching 20.3% in 2010 compared to men attaining 43.4% (UNESCO, 2015). However, the women’s literacy rate has improved, reaching 25% in 2014, whereas men’s literacy rate has remained static at 43% (WEF, 2014 ). This trend also holds among youth; the female youth (15-24) literacy rate improved by 5% between 2010 and 2011 while the male youth literacy rate during this period was unchanged (UNDP, 2014). Expected years of schooling, however, continues remain lower for women (7.6 years) than men (9.6 years).

Lower literacy levels, cultural norms and complex familial roles are factors that need to be addressed when developing training sessions for women. Improving women’s participation in ISFM can be done by increasing the number of female extension officers, using materials and media adapted to their literacy level and specific tasks, using established communication networks, adopting participatory approaches and developing gendered materials.

***Increasing Female Extension Officers***

First, to improve women’s participation in ISFM initiatives, more women need to be trained and recruited as service providers and extension officers, especially in Muslim communities (an estimated 90% of Malians are Muslim). A study conducted in Mali in 2008 reports that there wasonly one woman among the 302 management-level extension officers (Manfre, C., Rubin. D, Allen, A.,Summerfield, G.,Colverson, K., and Akeredolu, M , 2013). Evidence from studies conducted in a wide range of African countries “demonstrates that communication with women farmers is generally enhanced when female extension units are used as women cannot raise concerns in front of male extension workers (Jafry, Moyo, & Mandaloma, 2014). This situation is true even in countries with relatively few social barriers to male-female interactions”. Women are also more aware and sensitive to women farmers’ capabilities and abilities in regards to farm labour among household members (Sanginga &Woomer, 2009). Sanginga and Woomer note that male agents often do not have the expertise or interest in rural home economics. However, while increasing the number of women extension officers is important, male officers should be equally capable of reaching women and vice versa (while respecting cultural norms). Both male and female extension officers must be equipped with the knowledge and skills to address both men and women farmers equitably. According to Jafry, Moyo & Mandaloma (2014), this is achieved by creating an institutional culture of equality ‘whereby extension officers, whether they are men or women, are committed to upholding principles of inclusion’ while simultaneously “equipping both men and women extension officers with the participatory tools and skills to manage diverse cultural contexts, power dynamics, and exclusionary practices” (Jafry, Moyo, & Mandaloma, 2014). Support from male leaders and husbands should also be sought to reduce domestic tensions. A case study from Malawi highlight benefits and issues or working in groups of only women:

“The case studies clearly revealed that what works for women farmers is their ability to work in groups especially to support each other and to learn from each other. What was clear was women’s devotion and commitment to help each other. The case studies also revealed that having the support of their husbands is essential. Women farmers do prefer to work with female extension workers as this provides a conducive environment for women to be able to discuss issues. But the problem for women rests with their family situation. Women need the support of their husbands to act on extension activities” (Jafry, Moyo, & Mandaloma, 2014).

***Appropriate Media and Materials***

Second, appropriate visual materials that acknowledge their level of literacy is needed to address and teach rural women about ISFM. The Food and Agriculture Organization of the United Nations (FAO) notes that using audio-visual materials can be particularly useful when developing training sessions for rural women (Balit,1999). These materials are generally low cost, light weight and battery powered which makes them suitable for working in rural areas. Although even then attention needs to be paid to the timing and place of screenings as women are often less mobile than men and less likely to be able to travel to public places, particularly at night. Moreover, audio-visual media is effective for working with both with men and women as it can be used at convenient times and places: “women farmers do not have the time or money to travel to training centres and, for cultural reasons, often cannot attend training sessions with men” (Balit, 1999). The FAO also describes a situation where videos were used in larger training sessions for both men and women in an Islamic community. For instance, a screen can be used as divider between men and women to maintain cultural traditions if necessary. Films are being used extensively to improve rural training, and FAO has assisted with a “video-based farmer training methodology has been developed to reproduce farmers' knowledge at the same time as integrating it with modern scientific knowledge” (Balit, 1999). The film is often combined with simple printed guidelines for trainers and farmers alike, to support knowledge development. However, visual materials such as simple drawings are necessary for both men and women in low literacy contexts. In addition to adapting materials to the literacy level of participants, visual representations should be pre-tested with the target audience to ensure pictures are properly understood and the right message gets across.

Reaching individuals with low literacy rates requires training approaches that combine a variety of methods to ensure lessons are absorbed. Findings from a study conducted by in Mali revealed that both males and females favoured interpersonal communications channels as opposed to mass media, concluding that the “perceived value of oral communication is deeply embedded in the culture of many Malians” (Kante, Dunkel, Williams, Magro, Traore, & Camara, 2009). Another case study completed by Kante (2007) supports this evidence and recommends that visual-aids should be combined with interpersonal methods throughout training programs. The same author indicates that the involvement of community leaders in the innovation dissemination process is also important. Community leaders are oftentimes regarded as opinion leaders and have an informal influence over communities, meaning they should be well-informed to provide appropriate information to community members (ICT, n.d).

***Using Local Networks for Communication***

Third, using already developed communication channels, such as community radio channels can be an essential means for reaching rural populations, specifically women. The radio has proven to be an important and efficient means to reaching rural communities in Mali.

Mali has one of the strongest and diverse radio systems in Africa with over 300 local radio stations broadcasting in more than a dozen languages (ICT, n.d). Communities, including women are very involved at all levels, and in many cases the villagers constructed the station’s buildings themselves. The radio has proven to be an effective tool for the diffusion of important social and community messages including new agricultural production ideas and methods (ICT, n.d). While pluralistic media is empowering in participatory terms, it makes it hard for agencies like ASHC to reach farmers at scale, because syndicating messages through 300 very local stations is resource intensive and logistically complex. A Canadian charity, Farm Radio International, collects information on female radio preferences (stations, topics, hours of listening) which helps determine the most effective ways to reach women through the radio.

“The rural population can recognize the importance of community radio stations. Rural radio has helped lower cultural and religious barriers. The rights of women and children are now openly discussed, and local radio stations have played an important role in this change by providing debate in local languages on the status of women. Formerly taboo subjects, such as schooling for young girls, are now more openly discussed. Education about malaria and its causes has also been increased through radio, and the rural population has now come to understand that mosquitoes spread this disease.” (ICT, n.d)

Mali’s extensive radio system has provided Malian women with a platform to voice their concerns and promote dialogue and cohesion on rural development issues (Balit, 1999). The FAO highlights that that the radio is empowering tool for rural women; it offered them the opportunity to talk about issues that interest them. Likewise, women are increasingly receiving training in the programming and management of community radio stations so the content can better reflect their needs (Balit, 1999). According to Farm Radio International, as of 2011, approximately 79% of women in Mali have access to radio sets in their household (as seen in figure 1). Although men are the primary owners of the radios, FAO reports that women are generally able to listen during the evenings when household chores are completed.

According to the FAO, the most effective community radio programmes are those produced with audience participation, that are in local languages and those that acknowledge cultural traditions, the most successful features include live public shows, quizzes and village debates. Gender responsive agricultural programming in Tanzania ensured all women could listen to the radio programming by implementing a strategy called “programming on demand”. They trained women to record programs on wind-up MP3 players so it could be replayed for individuals or groups as often as needed. They also created listening groups where groups could listen to the programming together and support one another in understanding and applying the material. This was also an important medium for developing questions for radio programmers and receiving additional support from extension workers (Kanesathasan, 2012). A radio listener in Kodialanida, Mali illustrates the changes influenced by a local station:

|  |  |
| --- | --- |
| **Box 1: Communication with Malian men and women for ISFM:****How to communicate*** Have segregated training sessions
* Train female extension workers
* Adapt materials to education and literacy level
* Use simple messages with pictures and illustrations
* Utilize existing dissemination channels (e.g. radio)
* Provide demonstrations in the field accompanied by leaflets and posters in their native language
* Use bottom-up/ participatory training approaches (e.g. PLAR)
* Consult men (e.g. husbands and chiefs) to allow for women`s participation

**What to avoid:*** Not consulting or including men
* Not acknowledging women’s time and mobility constraints

Not acknowledging Mali’s socio-cultural context | “The radio station has brought about a genuine change in the everyday lives of villagers. It has prompted a qualitative change in farming techniques (helping in the selection of the best seed varieties, cotton processing and following the farming calendar). It has also brought about a change in attitudes: individualism has given way to a community spirit and the popularity of home improvements has increased as a result of programmes broadcast on this subject. The radio station has also been a great help to people striving to master water purification and treatment methods. And, it has increased enthusiasm for literacy. Generally speaking, it has helped greatly in raising awareness" (ICT, n.d). |



*Source: Farm Radio International, 2011 Participatory Approaches*

An examination of the literature illustrates that specific forms of teaching and instruction can influence farmers’ ability and desire to adopt ISFM practices. Defoer’s (2002) article describes how ISFM techniques were taught to smallholder formers at three sites in sub-Saharan Africa (including southern Mali) through a community-based farmer education approach known as the Participatory Learning and Action Research (PLAR) approach. In southern Mali, it was found that farmers that participated in PLAR were more likely to try new farming techniques than farmers from the control group. PLAR also resulted in greater farmer-to-farmer sharing of knowledge, with farmers that had been in contact with test farmers demonstrating greater experimentation and knowledge of new techniques. The FAO also emphasizes the importance of developing a participatory environment, and avoiding a top-down approach to create a climate of confidence and trust. It notes that “participatory communication methods can improve the linkages among women farmers, extensionists, researchers, policy-makers and planners, thereby fostering the exchange of information and knowledge and ensuring that development activities correspond to the real needs of rural communities” (Balit, 1999). Since the 2000s, ISFM has unfolded towards a more comprehensive approach, going beyond soils and integrating natural resource management (INMR) which emphasizes the importance of participatory approaches and market (Sanginga, Kaaria & Muzira, 2007).

***Gendered Materials and Settings***

According to a gender case study conducted with men and women in Mali in 2012 by the author, the most effective way to reach rural farmers (both men and women) regarding ISFM is through their farmer associations. In one village, there was a learning centre where the material could be taught and disseminated to men and women. According to both men and women, the most valuable teaching approach for them is demonstrations in the field accompanied by leaflets and posters in their native language. Simple messages with pictures and illustrations served as a valuable future references (Gender Case Study, 2012).Gendered material has proven to be particularly useful when holding separate training groups. To make the demonstrations and materials relevant to women they must contain information based on their typical settings and tasks. Traditional media, such as songs, dances and drama has also proven to be very effective at reaching rural women in Africa “These approaches have been used successfully to involve women farmers in expressing their problems and needs in a number of areas”(FAO, 1996). Excursions and tours can also be especially rewarding, as women rarely get to travel. Excursions give them additional opportunities to discuss issues and best practices with women in other communities (FAO, 1996).

|  |
| --- |
| **Box 2: Gendered Materials*** Resources that account for norms and lack of financial resources,
* Learning methods adapted to women`s literacy levels (e.g. more hands-on and group learning, pictorial training, videos, etc.)
* Resources relevant to women`s agricultural work and needs (e.g. information on crops women grow)
* Materials must strengthen women’s agency “by building women's ability to identify and act on economic opportunities, define, influence, and make economic decisions; and challenge social and cultural norms” (DFATD, 2014).
 |

In gender segregated societies, such as Mali, single-sex groups have appeared to be most effective as have been shown to build confidence among women: “free of norms that influence how men and women interact with each other, and without men dominating the discussion, women can work together to find solutions, and develop leadership skills”(Manfre Et. al.,, 2013). In Ethiopia, engagement approaches that target whole families or household proved that family-based learning can also be very successful (RIU, 2011).Decisions regarding the composition of training groups should consider social variables for specific activities and training.

Gender targeting is necessary to reach and integrate women into ISFM. As many of these new agricultural technologies were created by and for men it is difficult to adopt them from a women’s perspective. Therefore, in order to achieve expected results in terms of ISFM, development specialists must specifically target women’s roles and socioeconomic situation. Likewise, women’s time and mobility constraints must be acknowledged. Strategies must be developed to accommodate women’s tasks and responsibilities in order to ensure these sessions are not a burden. Carefully designed training sessions can be designed to best accommodate women, for example “a series of short training sessions, at a location that minimizes travel time. Offering childcare on site may be vital, and in some countries or regions provision may need to be made for male chaperones to accompany women (though not participate in training)” (Manfre Et. al, 2013). It is important to reiterate that no single method or approach will be suitable for all circumstances. Approaches and programs need to be developed relative to the specific communities’ needs and contexts.

**Conclusion**

Although Malian women play a vital role in agriculture and food production, they often remain in the background (UN Africa Renewal, 2014). Embedded gender roles and their socioeconomic situation often limit women’s ability to implement innovative practices to the same extent as men. Extensive literature in the previous decade has emerged showing the need to take a gender lens to addressing the need to incorporate women into development initiatives addressed to rural populations and to ensure programs are acknowledging their specific needs (Kanesathasan, Jacobs, Young and Shetty, 2013,). In terms of agriculture, and specifically ISFM, the literature review reveals that several training approaches and particular communication methods have proved successful at improving women’s ability to participate and apply new agricultural methods. ISFM programming must go beyond agricultural technical issues and address the underlying gender norms and issues that prevent women’s participation.

The purpose of this literature review was to acknowledge the barriers facing Malian women in implementing soil fertility management practices, particularly ISFM. In recognition of those barriers, we identified appropriate communication and training strategies to increase women’s ability to implement ISFM practices and increase their productivity. Overall, several factors can affect whether smallholder farmers choose to and have the capacity to adopt ISFM techniques. The environment that farmers operate in must be considered and addressed in all initiatives. The participation of men and women farmers in the identification of their needs and barriers should also be part of ISFM promotion strategies. Factors such as access to markets, and availability and ownership of land, labour, and resources, are some of the areas that were covered in the literature that impact farmers’ adoption of ISFM techniques. Gender issues related to markets, and availability and ownership of land, labour, and resources also need to be considered. In regards to training and communication, bottom-up participatory approaches have proven to more effective. Moreover, segregated gender sessions appear to be most appropriate in Mali due to cultural and gender norms. Training materials needs to acknowledge participant’s literacy levels and must contain simple messages and images. There are several communication channels (e.g. radio, television) that can be used depending on the particular community context.

**Bibliography**

Adolwa, I.; Okoth,P.; Mulwa, R.; Esilaba, A.; Mairura, F.; Nambiro, E. (2012). Analysis of Communication and Dissemination Channels Influencing the Adoption of Integrated Soil Fertility Management in Western Kenya. *Journal of Agriculture Education and Extension*, Vol.18.(1). p.71-86.

Balit, S. and Communication for Development Group Extension, Education and Communication Service. (1999). “Communication approaches”, Voices for Change, Rural Women and Communication. Food and Agriculture Organization of the United Nations. Rome. <http://www.fao.org/docrep/x2550e/x2550e04.htm>

CARE (n.d.) Pathways to Empowerment. Mali. [http://www.carepathwaystoempowerment.org/ portfolio-view/mali/](http://www.carepathwaystoempowerment.org/%20portfolio-view/mali/)

Defoer, Toon. (2002). Learning about methodology development for integrated soil fertility management. *Agricultural Systems* 73: 57-81.

De Groote, H., Coulibaly, N.(1998). Gender and generation: an intra-household analysis on access to resources in southern Mali. *African Crop Science Journal* 6: 79-96.

DFATD. (2014). Women’s Economic Empowerment: Guidance Note. http://www.international.gc.ca/development-developpement/priorities-priorites/weegn-aefno.aspx?lang=eng

Dillon, A. (2014). CGIAR Research Program on Water, Land and Ecosystems. Do we need a gender lens for climate risk management?http://wle.cgiar.org/blogs/2014/05/21/need-gender-lens-climate-risk-management/

Every Culture. (n.d). Countries and their Cultures: Mali. http://www.everyculture.com/Ja-Ma/Mali.html

FAO (1996). Trainer`s Guide: Improving Extension Work With Rural Women. http://www.fao.org/docrep/x0249e/x0249e02.htm

FAO (2013)``Monitoring African Food and Agricultural Policies (MAFAP): Review of Food and Agricultural Policies in Mali 2005-2011 – Country Report. http://www.fao.org/fileadmin/templates/mafap/documents/Mali/MALI\_Country\_Report\_EN\_Feb2013.pdf

FAO. (2015). “Sahel: FAO calls for emergency support to fight food insecurity”. <http://www.fao.org/emergencies/fao-in-action/stories/stories-detail/en/c/277526/> Accessed May 20th 2015

Farm Radio International. (2011). The new age of radio How ICTs are changing rural radio in Africa: African Farm Radio Research Initiative 2011. http://www.farmradio.org/wp-content/uploads/farmradioictreport20111.pdf

Grigsby, W.J. (2004). The gendered nature of subsistence and its effect on customary land tenure. *Society and Natural Resources*, 17:207–222.

ICT (n.d). Rural Community Radios In Mali. <http://www.ictregulationtoolkit.org/en/toolkit/notes/> PracticeNote/3153

IFAD (2011) “Enabling the rural poor to overcome poverty in Mali” <http://www.ifad.org/operations/projects/regions/Pa/factsheets/mali_e.pdf> Accessed May 20th 2015

IFDC. (n.d.). Soil Fertility in Africa. http://ifdc.org/integrated-soil-fertility-management/

IFPRI, “Smallholder adoption of ISFM”, <http://www.slideshare.net/ifpri/smallholder-adoption-of-isfm-usaid-jan-2015>

Jafry, Moyo, & Mandaloma, 2014. Assessment of Extension and Advisory Methods and Approaches to Reach Rural Women: Examples for Mali. Feed the Future.MAES Evaluation Series.

Kanesathasan, A, K Jacobs, M Young, A Shetty. (2013). Capturing the Gender Effect: Guidance for Gender Measurement in Agriculture Programs. Technical Brief. Washington, D.C.: International Center for Research on Women (ICRW)

Kanesathasan, Anjala. 2012. Cultivating Women’s Participation: Strategies for Gender-Responsive Agriculture Programming. Technical Brief. Washington, D.C.: International Center for Research on Women (ICRW).

Kante, Dunkel, Williams, Magro, Traore, & Camara (2009). *Communicating agriculture and health-related information in low literacy communities: a case study of villagers served by the Bougoula Commune in Mali.* Mali.

Kanté, A. (2007). Rural women’s perceptions of the diffusion of technological innovations that increase quality shea butter in Mali. Unpublished master’s thesis, Montana State University, Bozeman.

Manfre, C., Rubin. D, Allen, A.,Summerfield, G.,Colverson, K., and Akeredolu, M. (2013) Reducing the Gender Gap in Agricultural Extension and Advisory Services: How to Find the Best Fit for Men and Women Farmers). MEAS. USAID. https://agrilinks.org/sites/default/files/resource/files/MEAS%20Brief%202%20-%20Gender%20and%20Extension%20-%202013\_05\_13.pdf

Nederlof, E. Suzanne and Constant Dangbégnon. (2007). Lessons for farmer-oriented research: Experiences from a West African soil fertility management project. *Agriculture and Human Values* 24: 369-387.

OECD (n.d) Development Center, “Mali”,http://genderindex.org/sites/default/files/datasheets/ML.pdf

Saïdou, A., T.W. Kuyper, D.K. Kossou, R. Tossou and P. Richards. **(**2004). Sustainable soil fertility management in Benin: Learning from farmers. [*NJAS - Wageningen Journal of Life Sciences*](http://www.sciencedirect.com/science/journal/15735214) 52, no. 3-4: 349-369.

Sanginga, N. and Woomer, P.L. (eds). (2009). “Integrated Soil Fertility Management in Africa: Principles, Practices, and Processes. Tropical Soil Biology and Fertility Institute of the International Centre for Tropical Agriculture. Nairobi. 263 pp.

Sanginga, Pascal C., Susan Kaaria and Robert Muzira. (2007). The Resources-to-Consumption system: A framework for linking soil fertility management innovations to market opportunities. *Advances in Integrated Soil Fertility Management in Sub-Saharan Africa: Challenges and Opportunities*: 979-992.

## Toulmin, C. (1986). Access to Food, Dry Season Strategies and Household Size amongst the Bambara of Central Mali. *IDS Bulletin,* *17*(3), 58-66.

United Nations Africa Renewal. (2014). Gendering Agriculture. http://www.un.org/africarenewal/magazine/special-edition-agriculture-2014/gendering-agriculture

UNDP, “Mali”,http://hdr.undp.org/sites/all/themes/hdr\_theme/country-notes/MLI.pdf

Wanvoeke, J., Maiga, D., Yattara, K. & Van Mele, P. (2008). Agriculture’s Network, “Women Break Down Barriers in Mali”. LEISA magazine [http://www.agriculturesnetwork.org/ magazines/global/respect-through-farming/women-break-down-barriers-in-mali](http://www.agriculturesnetwork.org/%20magazines/global/respect-through-farming/women-break-down-barriers-in-mali). Accessed May 19th.

World Bank (n.d.) Please add reference

World Bank (2014). Levelling the Field: Improving Opportunities for Women Farmers in Africa. <http://www-wds.worldbank.org/external/default/WDSContentServer/> WDSP/IB/2014/03/14/000333037\_20140314131214/Rendered/PDF/860390WP0WB0ON0osure0date0March0180.pdf

**Images**

<http://uniontheater-greenroom.blogspot.ca/2013/12/from-mali-to-madison-bassekou-kouyate.html>

<http://www.fao.org/emergencies/countries/detail/en/c/148719/>

**Video**

African Soil Health Consortium. 2013. *Women in Extension*. Access Agriculture. http://www.accessagriculture.org/node/515/en. Accessed April 5, 2013.