Gender and Agricultural Extension: Why A Gender Focus Matters?

Ileana Ivelisse Diaz and Dina Najjar
December 2017

Funded by:

RESEARCH PROGRAM ON Wheat

CGIAR

With the financial support of

Federal Ministry for Economic Cooperation and Development

Acknowledgements

The authors are grateful to the funding provided by the Consultative Group for International Agricultural Research (CGIAR) Research Program Wheat grant number 100230. The literature review was also enabled with the financial support of the Federal Ministry for Economic Cooperation and Development, Germany grant number 200062.

About the Authors

Ileana Ivelisse Diaz is a PhD candidate in the Department of Geography at the University of Waterloo, Canada.

Dina Najjar is the Social and Gender Specialist in the Social, Economics and Policy Research Group at the International Center for Agricultural Research in the Dry Areas (ICARDA), Rabat, Morocco.

Contents

1. Introduction

Extension services must seek to challenge some of the practices which produce gender inequality if they are to be successful in the long term at increasing agricultural productivity without increasing the resources used by transferring technology developed by researchers (Anandajayasekeram, Puskur and Hoekstra, 2008, p. 60; World Bank, 2009). Some authors argue that extension services are a crucial way for the world's poorest people to adopt agricultural innovations, which in turn will address issues of poverty, hunger and women's empowerment (Anandajayasekeram, Puskur and Hoekstra, 2008; Jafrey and Sulaimon, 2013b; World Bank, 2009). Despite reiterated concerns about lack of gender analysis in agricultural extension programs, the problem still prevails (Percy 1999, Percy, 2005; World Bank, 2009). Lambrecht, Vanlauwe and Maertens (2016) state that gender continues to be "rarely considered in the literature on agricultural extension and technology adoption" (p. 2). This review was compiled from a broad search of the literature on gender and agricultural extension. The literature reviewed here is global in its focus to attend to broad trends in the field and practice of agricultural extension. Our aim is to highlight the importance of gender integration into agricultural extension programs in various parts of the world in order to raise much needed awareness on the subject. We do not aim for an extensive literature review but to identify implications for not including gender, ways to do so, and means to move forward. We pay attention to extension design, content, approaches, and impact. We will start this literature review by a discussion of the significance of gender considerations to agricultural extension, then move to how gender continues to be missing from the extension literature, women's empowerment and extension, the implications for different approaches to extension, and the

implications for the content of extensions programs. Finally, we conclude with a discussion of what is still missing from the discussion of gender and extension, as well as key themes which emerge from the literature.

2. Importance of Gender to Agricultural Extension

It is crucial to attend to gender in agricultural extension because gendered inequalities contribute to global hunger and food insecurity (Njuki, Parkins and Kaler, 2016, World Bank, 2009), and because generally, extension services that do not have an explicit focus on women and gender often do not recognize the important labor that women contribute to agriculture, and the structural condition which includes their domestic roles that can limit the types of training available to them (Anandajayasekeram, Puskur and Hoekstra, 2008). For example, a study in Uganda noted that residential training, or training which requires a large time commitment might be incommensurable with childcare and other duties in the home (Anandajayasekeram, Puskur and Hoekstra, 2008, p. 57). Furthermore, innovations designed to reduce labor and free up time can often increase women's labor burdens (Beuchelt and Badstue, 2013). As such, the conditions of women's inequality will persist if gender is not integrated into agricultural extension, which limits the efficacy of extension specifically, and of development projects more generally.

Of concern to development organizations and policy makers is what factors influence the adoption of improved technologies positively or negatively (Ainembabazi and Mugisha, 2014; Ragassa et al., 2013). Despite an ostensible acknowledgment of gender in many extension services, they often fail to meet or recognize the very different needs of men and women farmers, or the very different roles they may have in agriculture (Jafrey and Sulaiman, 2013a). While women in agriculture have been quite extensively studied since the 1980s, extension services in developing countries are often not sensitive to gender and the specific needs and desires of

women farmers (Jafrey and Sulaiman, 2013a). In this instance, the ability to even articulate their needs and desires can be limited because of a lack of access to education and training (Jafrey and Sulaiman, 2013a, p. 433). While agricultural extension services systemically neglect women, they are an integral part of agriculture in all developing countries and are often "the backbone" of the agricultural workforce in many contexts, sometimes supplying the bulk of the labor required, and in other cases performing the most undesirable labor (Jafrey and Sulaiman, 2013a, p. 470). Kabeer also points out that women agricultural workers often perform the lowest-paid, least-valued, least-desirable work (Kabeer, 2012, p. 26-27). This neglect of women by extension services contributes to women's continued food and income insecurity.

Alex argues that women in agriculture are particularly marginalized under neoliberal economic policies that have deprioritized agriculture in Kerala, India (Alex, 2013). As a result, "the decreasing contribution of agriculture to the national economy has taken its toll on availability of sustainable employment from agriculture," which women are most vulnerable to because they often lack control over resources (Alex, 2013, p. 488). With less investment in agriculture, rural women are at an increasing disadvantage. In Kerala, agriculture has been on the decline, particularly the cultivation of rice, which has implications for women's livelihood and food security. Alex argues that mechanization of rice production by collectives of women has been the most effective innovation in the area, because of a shortage of labor (Alex, 2013, p. 494). This case study showed that adoption of this innovation increased the capacities of women participants and helped to diversify livelihoods in the Kerala region, since the cultivation of rice had been in decline in the region before the innovation was introduced (Alex, 2013). Furthermore, the case proved that focusing innovations on women can be as successful as extension programs that target men; however, the empowerment of women requires more

institutional changes and must be context-sensitive, taking into account the particular understandings that surround gender and incorporating approaches which seek to expand women's roles in agriculture.

There is evidence that globally, when women are the targets of extension services, the benefits are typically felt by both women and their children; yet, many women are trained in "home economics" rather than in more technical forms of agriculture because of gender biases (Anandajayasekeram, Puskur and Hoekstra, 2008, p. 57). If extension services are to be useful to women, they must take into account the unique social, cultural and economic contexts of women, and their implementation must be adjusted accordingly. For example, training programs might consider providing facilities or services for the care of children and washing or sleeping arrangements that are more private if overnight stays are required (Anandajayasekeram, Puskur and Hoekstra, 2008). As such, Jafrey and Sulaiman argue that an "overhaul" of most extension services is necessary, so that they are more sensitive to issues of gender, such as being more vulnerable to poverty and hunger (Jafrey and Sulaiman, 2013b).

Farnworth and Colverson (2015) intervene in the discussion on gender and extension by positing that the interests of men and women in Sub-Saharan Africa do not have to be conceptualized as always in opposition to each other. They argue that because agriculture, and farmers' social contexts are shaped by gender, so too are extension services. A focus on men's assets versus women's assets precludes what could be produced in collaboration (Farnworth and Colverson, 2015). The authors contend that there is little use in increasing extension services if men and women are not equally empowered to access them and make decisions about them. While there is consensus that more equitable gender relations increase productivity (Farnworth and Colverson, 2015; FAO, 2011), most extension services still assume a male-led household

and farming operation. However, the authors argue that farms run as a "partnership between men and women" would be even more productive, and reap other gains such as empowerment for men and women (Farnworth and Colverson, 2015, p. 21). The authors argue that a "conceptual lock-in" is operating in most development literature and in the design of extension services, which entrench gendered notions about farming which tend to marginalize and homogenize the roles of women in farming, while ensuring that men are considered the primary farm laborers and decision-makers (Farnworth and Colverson, 2015, p. 22-27).

Similarly, Lambrecht, Vanlauwe and Maertens found that joint participation of male and female farmers leads to higher technology adoption of improved legume varieties, row planting, and mineral fertilizer in South Kivu, Democratic Republic of Congo (Lambrecht, Vanlauwe and Maertens, 2016). These three technologies seem to be better adopted when both male and female farmers participate in the programs (Lambrecht, Vanlauwe and Maertens, 2016, p. 2). Findings suggest that by targeting both genders of a household that agricultural extension programs can be more cost effective (Lambrecht, Vanlauwe and Maertens, 2016). However, another important finding was "that programme participation has different implications for female farmers in male- versus female-headed households and has a larger impact on adoption in the latter case," and moreover, "that female programme participation is more effective for certain types of technologies than for others" (Lambrecht, Vanlauwe and Maertens, 2016, p. 22-23). In making the argument that gender must be attended to with extension services, it means that differences produced by gender must be acknowledged, while also not accepting them as natural or inherent, which can close off other possibilities, such as collaborative approaches that involve all genders.

3. How Extension Services Exclude on the Basis of Gender

Understanding the social context of communities when practicing development work is of utmost importance. However, while gender is essential to understanding the context in which development is being implemented, it is often not integrated, even into innovative approaches that attempt to take multiple factors into account. As a concept, an agricultural innovation system (AIS) seeks to integrate agricultural development with the political, social and economic contexts where agricultural innovations occur (Kingiri, 2013). Kingiri argues that even though most literature on AIS have not been attuned to gender, AIS can open up new ways of integrating gender issues into agricultural innovation and extension, particularly because the framing of debates around gender and development do not take into account how complex and unique gender and gender roles are in any given context (Kingiri, 2013, p. 536). Rather than approaching issues of development and innovation through gender analysis, they should be approached as "gender learning," (Kingiri, 2013, p. 535) which also shifts the focus from empowering individual women to increasing the capacity of the AIS to transform gender relations, through creating more effective innovations. While there is a clear emphasis on measurability and standardization of processes when evaluating and designing development projects, scholars who propose different processes for analyzing development also argue that these processes need to be attuned to cultural and geographic specificity if they are to be effective (Alkire et al., Birner et al., 2009; 2013; Higgins, Bond and Kindorny, 2012; Kristjanson et al., 2014; Meinzen-Dick et al, 2012; Njuki, Parkins and Kaler, 2016). However, the more complex a proposed measure or evaluation tool is, the harder it is to implement in practice, there is also a level of rigidity to standardization that can make some methods of evaluation much less attuned to specific contexts.

D'Excelle and Holvoet attempted to address a divide in the literature on gender, networks and empowerment, though their research in rural Nicaragua. In particular, they were interested in the "relation between gender and network formation" as well as the differences in men's and women's networks (D'Excelle and Holvoet, 2011, p. 31). There is evidence that building social networks give women increased control over resources, yet men and women experience and benefit from networks differently and that some networks may further entrench gender inequity (D'Excelle and Holvoet, 2011). This is because gender also informs that kinds of networks an individual is able to create. One reason for the divergence in arguments regarding the benefits of network building in relation to gender is that most studies do not analyze the same kinds of networks. Indeed, D'Excelle and Holvoet suggest the need to "consider social networks as the dependent rather than independent variable, and refrain from clumping together all types of networks under one heading" (D'Excelle and Holvoet, 2011, p. 54). D'Excelle and Holvoet suggest that in Nicaragua, women tend to benefit from networking with men, yet networks tend to be gender-segregated because women are regulated to domestic and care work, and are less able to make far-reaching networks, or local networks with powerful individuals in the public sphere (D'Excelle and Holvoet, 2011). Furthermore, women's networks tend to be smaller and geographically limited, since women's mobility tends to be limited to their home areas. As such, policies and programs which do not explicitly take gender into account can further entrench the power structures already in place with gendered networks.

Ragasa et al. are concerned with gender differences in access to agricultural extension services and how this equates to differences in technology adoption and agricultural productivity in Ethiopia, where the government has allocated massive investments in their extension system and has the largest ratio of farmer to extension agent is found worldwide (2013, p. 7). They

employed a cross sectional instrument variable regression method from 7530 household surveys taken by the Central Statistics Agency (CSA) in four regions of Ethiopia. Ragasa et al. found that male heads of households are more likely to be visited by and to receive advice from development or extension agents than female heads of households. Findings suggest that female heads of households and plot-managers are less likely to get extension services than male counterparts, at a difference of 10% (2011, p. 13). Since receiving advice from extension agents equates to the adoption of varied seeds and fertilizer for both genders, the differences is receiving services based on gender is important to address (Ragassa et al., 2013).

Globally, the activities of extension services can often be of limited use or access for women. According to Lamontagne-Godwin et al., the ease of understanding and applicability of advice directed at women farmers regarding agricultural extension services needs to be better understood (Lamontagne-Godwin et al., 2017). This is because "women's lack of access to extension advice, land, resources, agricultural inputs and lack of professional opportunities in agricultural extension due to national sociocultural defined roles and identities is considered to be one of the greatest restrictions for increased agricultural output and productivity" (Lamontagne-Godwin et al., 2017, p 3). Agricultural innovations, including extension services can be profoundly useful for impoverished farmers, and because they can lessen the labor and time input of agriculture, they may be especially useful to women (Anandajayasekeram, Puskur and Hoekstra, 2008; Jafrey and Sulaimon, 2013b). However, despite the implementation of innovations, gender inequality, in the form of authority and profit over resources, access to services, and lack of opportunities remains in agriculture. This is partly because extension services historically catered to and targeted men, which are compounded by other forms of gender based inequity, such as limited access to education and land tenure systems which do not

recognize or allow for women's ownership of land (Jafrey and Sulaiman, 2013b). As such, agricultural innovations must be sensitive to gender. In this regard, some authors advocate gender transformative approaches to development, which seek to challenge and modify existing social relations for development outcomes that are more equitable (Beuchelt and Badstue, 2013; Farnworth and Colverson,2015; Hillenbrand et al., 2015; Kantor, Morgan, and Choudhury, 2015; Njuki, Parkins and Kaler, 2016).

4. Women's Empowerment and Agricultural Extension

Sensitivity to gender also includes studying how gender can affect the attainment of empowerment. While the aim of the third Millennium Development Goal (MDG) was to "promote gender equality and empower women," development, particularly in regard to agricultural extension has not always put an analysis of gender at the forefront (Alkire, et al., 2013, p. 71). Even though women contribute greatly to agriculture in all developing countries, their efforts are often devalued or go unrecognized, because of existing gender biases within communities and in development organizations (Anandajayasekeram, Puskur and Hoekstra, 2008, p. 56). Feminist and gender scholars have contributed to the field of development studies by highlighting the kinds of gendered power relationships and structures which can limit women's economic capacities (Kabeer, 2012). This kind of scholarship also highlights that while increased gender equality is a worthy end in its own right, it also contributes to positive development outcomes overall (Kabeer, 2012, p. 4-5).

However, scholars have also found that fast-growing economies can exacerbate gendered inequities, such as barriers to education and employment, because the focus is on growth and productivity rather than equity (Beuchelt and Badstue, 2013; Kabeer, 2012). Control over resources can often remain unequal, leaving women and children most vulnerable to the effects

of development programs that do not integrate gender into their design. Scholars argue that increased income and productivity should not be the end goal of development, but rather improvement to human experiences because the benefits of innovations are not always evenly distributed and may even exacerbate gender inequalities (Beuchelt and Badstue, 2013, Kabeer, 2012). Several authors have noted that much importance is placed on development projects, such as agricultural extension being able to achieve specific and measurable outcomes, as well as having the ability to analyze and evaluate aspects of development in a standardized way (Alkire et al., Birner et al., 2009; 2013; Kristjanson et al., 2014; Meinzen-Dick et al, 2012). When gender inequality or women's empowerment in agriculture become part of a development program, this can create some difficulty if it is not measurable and comparable (Alkire et al. 2013). Since empowerment is so complex, comprising of multiple dimensions, it can be difficult to measure, and without a method to measure it, empowerment is often not included in development programs (Alkire et al., 2013, p. 89). In particular, there had not been an index which measures the issues that effect women in agriculture, or in rural areas more generally.

The Women's Empowerment in Agriculture Index (WEAI) "measures the empowerment, agency, and inclusion of women in the agricultural sector" (Alkire et al., 2013, p. 71). The WEAI is made up of two subindexes and multiple indicators because high achievement in one area is not enough to substantively alter a woman's life conditions. Instead, "empowerment in agriculture occurs when a woman has adequate achievements across a set of different conditions […] she needs the joint distribution of advantages to exceed some threshold" (Alkire et al., 2013, p. 75). The index can be used to analyze empowerment generally and to locate which area(s) of empowerment are most lacking in a given context, allowing policy makers to target development in the corresponding domain of empowerment. The gender of the facilitator can also be an

important part of the context. It is widely believed that women in Sub Saharan Africa prefer working or need to work with women extension agents (Ezumah and Di Domenico, 1995; Due et al., 1997; Percy, 1999; Shibanda and Seru, 2002). Ezumah and Di Domenico (1995), Percy (1999), Shibanda and Seru (2002), among others, recommend increasing the number of female extension agents to overcome cultural barriers in communication between male extensionists and female farmers, which so far have resulted in few visits to female farmers.

Galie (2013) focused on tracking changes in empowerment through the adoption of a Participatory Plant Breeding (PPB) program, as articulated by women farmers in Syria. The indicators of empowerment were selected in collaboration with the 12 study participants (all women farmers), included: "'recognition of women as farmers'; 'access to opportunities' (such as the PPB); 'access to and control of productive resources', particularly seed and information; and 'decision-making' about agronomic management" (Galie, 2013, p. 203). Recognition that women can be farmers is a key issue, because taking women's roles in agriculture seriously can also make them key players in extension programs. Galie argues that empowerment is a "self-determining process" and that the "empowerment of women farmers is increasingly important in countries where the feminization of agricultural labour is making women farmers key participants in the agricultural development of small-scale farming" (Galie, 2013, p. 197).

MacEwan and Beck explore conceptual relationships about power and empowerment as they have taken shape in South Africa, claiming that reductionist policies form in consequence to shifting the focus from nation building to neoliberal policies, and that these have depoliticized and disempowered people in the country (MacEwan and Beck, 2006). The conduit for examining how this operates in the agribusiness sector is the wine industry where labor by the Black population has historically been exploited and currently the industry reinvents itself by marketing

'empowerment wines' and practicing questionable ethical and fairness practices (MacEwan and Beck, 2006, p. 2). Kabeer notes that some economic activities seem to produce more empowering results for women than others, with formal wage work outside the home having the most potential to transform unequal gender relations. This is also the type of work that is usually least available to women (Kabeer, 2012, p. 50). Agricultural work is often not deemed the most empowering work, and the Millennium Development Goals also advocate for an increase in non-agricultural employment for women, particularly because agricultural wage labor (which is differentiated from farm ownership) is some of the lowest paid, least valued, least desirable work for women (Kabeer, 2012, p. 26-27). However, non-agricultural does not necessarily mean that women are employed in long-term, meaningful work, instead they are more likely than men to be employed in precarious or exploitative work (Kabeer, 2012, p. 15). Economic growth must be approached with an explicit understanding that it is not inherently beneficial for all actors, and should be complemented with policies that address gendered economic inequality. Peterman et al. emphasize that "attention to gender differences in control of resources and intrahousehold bargaining should be components of research and programme implementation" and "recommend gender be integrated in agricultural programmes and research within the context of regional ecological and biophysical needs, as well as regional cultural differences" (Peterman et al., 2011, p. 24).

Hillenbrand et al. conclude that indicators of gender transformative change in livelihood and agriculture needs to be context specific (Hillenbrand et al., 2015). However, rather than suggesting rigid parameters, or universal indicators, the authors propose a set of guidelines to measure gender transformative change for practitioners and development organizations including: examining organizational structures and training, creating understandings that gender-

transformative change is not a technical process but rather a political one, using participatory action-oriented research methodologies with gender-analysis to develop context-specific indicators, being open to organizational change as new information arises, developing relationships and partnerships outside of the organization, ensuring transparency and accountability (Hillenbrand et al., 2015, pp. 47-50). Hillenbrand et al. argue that women's empowerment and transformative change cannot be considered an individual responsibility, but rather must be taken on as a collective duty, achieved through political action and engagement (Hillenbrand et al., 2015, p. 5). The "mainstreaming" of women's empowerment, particularly in the form of the Millennium Development Goals, reflects neoliberal political and economic values (Hillenbrand et al., 2015). This makes individuals responsible for their own empowerment, while leaving the larger political, social and economic contexts and institutions which are responsible for gender inequality intact. However, most literature on agricultural extension is focused on productivity, and even that which does include a gendered focus is often aimed at simply examining the gendered relationships, such as focusing on the unequal power relations between women and men and not transforming them.

5. Different Extension Approaches and their Gender Implications

While most developing countries are reliant on small-scale agriculture, its productivity has not increased worldwide (Anandajayasekeram, Puskur and Hoekstra, 2008). This is further compounded by the limits of resources such as land and water, which are finite (Anandajayasekeram, Puskur and Hoekstra, 2008, p. 30). Extension services have shifted dramatically over time from a top-down approach to more pluralistic approaches to approaches which also focus on entrepreneurship rather than transfer of technologies only (Pretty, 2002; Mudege et al., 2015). However, some argue that the top-down approach still prevails in Sub-

Saharan Africa (Mudege et al., 2015; Spaling et al., 2013). Anandajayasekeram, Puskur and Hoekstra argue that extension services worldwide should focus on increasing farmer knowledge and observation skills so that farmers come to see some agricultural practices as untenable, while also being able to monitor progress practices (Anandajayasekeram, Puskur and Hoekstra, 2008). Also of importance is integrating farmer and Indigenous knowledges and practices (Anandajayasekeram, Puskur and Hoekstra, 2008, p. 37).

Hillenbrand et al. (2015) argue that gender transformative approaches stress the importance of examining and addressing the structures and unequal power relations which produce gender inequality. As such, "gender transformative approaches aim to move beyond individual self-improvement among women and toward transforming the power dynamics and structures that serve to reinforce gendered inequalities" (Hillenbrand et al., 2015, p. 5). Of particular importance to gender transformative change is questioning and challenging "internalized belief systems and closely held identities, […] entrenched institutionalized structures, and […] everyday habits and relationships that may be caring as well as unequal" (Hillenbrand et al., 2015, p. 6). For instance, Mudege et al. found that gender and cultural norms determine farmer access to information as "some men regard themselves as representatives of their households during training and [….] extension officers reinforce these views by using biased training recruitment methods" (Mudege et al., 2016, p. 291). Gender norms related to decisions made in the household impacted the ability of women to access training opportunities and information (Mudege et al., 2016).

Spielman, Davis and Negash propose that using an innovation systems framework analysis "can contribute to addressing the discrepancy between the changes in policies, actors, and relationships, on the one hand; and [agricultural] productivity on the other" (Spielman, Davis

and Negash, 2011, p. 196). Most of Ethiopia's population (approximately 80%) is rural and lives in widespread poverty (Spielman, Davis and Negash, 2011, p. 198). There are extreme land shortages, severe droughts, variable rainfall, and declining soil fertility. One finding supports the "need to further explore policies and programs that create more space for market and civil society to participate in smallholder innovation networks and improve welfare," while a second one supports "incorporating rigorous applications of social network analysis into innovation systems theory" for the purpose of better understanding if smallholders are adopting innovations (Spielman, Davis and Negash, 2011, pgs. 208-210). Meanwhile, Kantor, Morgan and Choudhury (2015) argue that gender transformative approaches should be incorporated into agricultural research for development (AR4D), so that AR4D can better respond to the specific needs and contexts of the people who most need it. Since AR4D "seeks to bring together analysis, action, and change across multiple levels of spatial, economic, and social organization," the authors argue that it is already amenable to addressing gender inequality (Kantor, Morgan and Choudhury, 2015, p. 295).

Gender is foundational to how individuals understand themselves, their capabilities, what is expected of them and what resources they can access as well as to how organizations and institutions structure resources, opportunities and access to them (Kantor, Morgan and Choudhury, 2015). Therefore, Kantor, Morgan and Choudhury advocate that a gender based approach to the social aspects of AR4D is crucial to understanding and addressing the inequalities that can occur in agriculture and development (Kantor, Morgan and Choudhury, 2015). For instance, Beuchelt and Badstue (2013) note that global agricultural productivity is not the cause of hunger and malnutrition, and therefore development initiatives need to take human development and food security into account. They argue that despite increased global

agricultural productivity and a global food supply that is sufficient to feed its population, nearly 900 million people go hungry while 2 billion people are malnourished (Beuchelt and Badstue, 2013, p. 709). Highly productive farms may not produce the most nutritious, diverse or environmentally friendly food. However, approaches to agriculture that are sensitive to environmental or nutritional concerns are not inherently sensitive to issues of existing social inequities, including gender based inequities, and instead focus on technological innovations (Beuchelt and Badstue, 2013, p. 710). As Njuki, Parkins and Kaler argue, the "existing research methods and evaluation tools are not yet up to the task" of addressing gender inequality, including evaluation of agricultural extension programs (Njuki, Parkins and Kaler, 2016, p. 288).

Quisumbing and Pandolfelli (2010) found that the most promising approaches to creating agricultural innovation include continuing efforts to strengthen women's land rights and investing in education and schooling, promoting divisible technologies or smaller input packages that are more affordable and opportunities for groups to achieve economies of scale, adaptation of program design or service delivery to client needs, considering interactions among inputs rather than treating each input in isolation, and taking gender roles into account when designing and implementing projects (Quisumbing and Pandolfelli, 2010, pgs. 8-9). In addition to this, a number of issues stood out as making innovation adoption difficult for poor women farmers such as a lack of rigorous evaluation of approaches and gender impacts, lack of exploration of alternative designs and delivery mechanisms, meeting women's diverse needs, and sensitivity to culture and context which take into account country-specific gendered policies and programs (Quisumbing and Pandolfelli, 2010). While the actual quality of the advice may be hard to assess given the difficulties in determining technical accuracy, affordability and available practices, Lamontagne-Godwin et al. propose that it should be measured in relation to health services and

human and animal health systems, meaning that overall state of human and animal health can indicate the quality of advice given, in that higher-quality advice should result in better health for people and animals in a given system (Lamontagne-Godwin et al., 2017).

Davis et al. argue that extension services are "critical" for addressing rural poverty since they involve farmers in agricultural knowledge systems (Davis et al., 2012). They focus on farmer field schools (FFS), as "a participatory method of learning, technology adaptation, and dissemination," where farmers conduct research, problem solve, and suggest solutions (Davis et al., 2012, p. 402). This approach differs from more traditional approaches to extension services, which are top-down, instead FFSs encourage farmers to develop their own leadership and decision making skills. Davis et al. found that FFSs increased productivity and incomes significantly more for women than for men, inferring that men already had larger land holdings and greater access to education (Davis et al., 2012). As such, FFSs can be an important practice to ensure that extension services are relevant to women. Meanwhile, Szony and Blum (2012) found that extension services are lagging behind in relation to meeting the goals of zero hunger initiatives in developing countries (Szony and Blum, 2012, p. 1). They created "an extension investment model (EIM) based on socio-economic macro indicators (poverty/undernourishment, access to information and population density) and a method to define estimates for cost increases related to climate change" (Szony and Blum, 2012, p. 1). This suggests that investment targets for agricultural research as well as extension investment will continue to increase in the millions by 2025 (Szony and Blum, 2012). The EIM model would benefit from an explicit engagement with gender, because gendered power dynamics are inherent to the indicators used in the model. For example, access to information is mediated by gendered factors such as the extent to which a person can engage in the public sphere.

Research design is as effected by gender relations as the phenomena being studied. Mayoux (1995) argues that inequalities influence activities, resources, and the frameworks of participatory research. There can be many barriers to women's participation in these projects, which stem from gendered inequalities and these projects can often fail to live up to their expectations because women continue to be marginalized, even in organizations that include a mix of genders and that emphasize the participation of members (Mayoux, 1995, p. 6). Tensions that can arise from agricultural extension participatory research may be a result of ideas of common priorities and consensus without consideration of the context and case by case differences, as well as the different needs of men and women.

Development agencies, particularly those doing research-for-development, face increasing pressure to demonstrate that there is a clear link between research, agricultural extension and long-term, substantive development outcomes (Kristjanson et al., 2014). Kristjanson et al. argue that a set of approaches that might facilitate making this link clearer are social learning approaches. Social learning approaches can take many forms, but essentially are a collaborative process that involve multiple actors with different stakes in the development process, and can include initiatives such as farmer field schools, or community based management. A larger, more robust body of evidence needs to be built in order to assess the efficacy and efficiency of social learning approaches and to understand social learning approaches as they relate to adoption of innovations (Kristjanson et al., 2014). As such, the authors argue that organizations engaging in social learning approaches should employ a standardized framework of documenting and assessing the social learning approaches so that a larger body of evidence can be built to understand this approach to agricultural development.

Since extension services are usually designed with a male subject in mind, Farnworth and Colverson (2015) propose a "gender transformative extension and advisory facilitation system" (GT-EAFS), which they define as a model for creating extension services that will address the needs of women and ultimately gendered shift power relations, to reach the ultimate goal of gender equality (Farnworth and Colverson, 2015, p. 27). In order for GT-EAFS to work, underlying systems of power have to be challenged, which is why many extension services fail to address gender inequality. Farnworth and Colverson argue that "an extension and advisory facilitation system (as opposed to a service) is required" because it is based on creating knowledge with farmers rather than disseminating knowledge to them (Farnworth and Colverson, 2015, p. 28). As such, combining existing innovative approaches to gender and agricultural extension such as working with existing social structures in order to transform them, and in particular, including men in the process to develop collaborative relations can help create effective approaches to a gender-transformative extension and advisory facilitation system (Farnworth and Colverson, 2015).

6. Implications for the Content of Extension Services

Aimed at standardizing how gender is understood in development, Meinzen-Dick et al. propose mapping the patterns of gender roles as they occur in a given context in order to understand the different realities of access, control and ownership of agricultural resources (Meinzen-Dick et al., 2012). This in turn can increase the efficacy of agricultural policy interventions, by making information more easily accessible. They propose a systemic collection of data to map gendered farm management systems (Meinzen-Dick et al., 2012). Premised on the importance of "the role of agriculture for pro-poor development" in order to ensure farmer livelihoods and food security Birner et al. propose a framework for analyzing agricultural

advisory services (Birner et al., 2009, p. 342). Ultimately, they are concerned with answering the question of what agricultural advisory services work best in a given context so that policy makers can "identify the combination of reform approaches that best fit the situation under consideration" (Birner et al., 2009, p. 343). In order for policy makers to achieve the "best fit" Birner et al. created a conceptual framework for the design and assessment of agricultural advisory services which is designed to take into account contextual factors and to be responsive to farmer needs and requests (Birner et al., 2009, pp. 343-344). Despite calls by some analysists to include only measurable goals, Higgins, Bond and Kindorny argue that that norm setting – referring to "political decisions" about what is important to prioritize- will be important if post-2015 frameworks are to address important, but often not easily measurable goals, such as promoting gender equality (Higgins, Bond and Kindorny, 2014, p. 39).

6.1 Examples of Extension Programs and Gender

Agriculture is an important part of Tunisia's economy and as pressures from a competitive global economic system increase, maximizing the productivity of agriculture is essential (Touayi, n.d.). As such, the agricultural extension system of Tunisia (AEST) AEST has operated for decades and evolved into a complex system with a wide variety of programs, activities and focuses (Thabet et al., 2015). The materials produced by the AEST such as audiovisual and written texts tend to be comprehensive; however, the AEST is limited in several areas, including its limited conceptualizations of farming and of relationships of power (Thabet et al., 2015). An implication of this is that it limits who can benefit from extension, and without examining power relationships, gender can go largely unexamined. Additionally, the top down nature of its programming, which is predominantly technical in nature makes it quite rigid (Thabet et al., 2015). This limits the ability of the AEST to meet the needs of diverse farmers

with unique circumstances who are dispersed throughout the country. A lesson that can be learned from the AEST is to broaden the focus of programming to include providing information and education rather than focussing solely on technical solutions, as well as strengthening the ties between research and extension programs (Thabet et al, 2015, p. 214; Touayi, n.d.).

Lamontagne-Godwin et al. (2017) use data from a program called Plantwise (plantwise.org) which is used as a central data base on plant clinic networks to give farmers advice on any factor affecting a given crop in Ghana and Sri Lanka. Information from Plantwise is extracted to determine whether the advice given to male and female farmers by "plant doctors," a term given to extension workers at plant clinics differs in any way based on gender. It was found that in Ghana 80% of advice directed at women farmers and 81% directed at men farmers was accepted. In Sri Lanka, 76% of recommendations made by the plant doctors to men and 68% of the recommendations made to women were accepted (Lamontagne-Godwin et al., 2017, p. 7). Findings suggest a "significant difference between accepted recommendations, where a farmer was able to use and implement the advice of the plant doctor for Ghanaian and Sri Lankan men farmers, and also for Ghanaian and Sri Lankan women farmers (men: $p = .003 < .05$; women $p = .05$)" (Lamontagne-Godwin et al., 2017, p. 7). Male farmers accepted 100% of male plant doctors' advice and 90% of advice from female plant doctors. Female farmers' main issue with the advice was the lack of impracticality of the recommendations as they were too costly and did not fully address their issues.

In Malawi, potato is highly valued as a key crop by both male and female farmers (Mudege et al., 2016). Potato farming can provide a diversification opportunity for women in the country and with strong extension initiatives can potentially be gender-transformative as more and more women would harvest the male dominated crop (Mudege et al., 2016, p. 3).

Unfortunately, extension is greatly constrained in Malawi and there is a shortage of agricultural extension agents. Adopting a social relations approach, Mudege et al. explored how gender relations influence the use of seed technologies, access to technical information and training. The authors conducted 35 focus groups as well as individual interviews in two districts (Dedza and Ntcheau) in Malawi in 2013, a total of 350 farmers and 4 extension agents participated in this research. They also collected data on training offered, recruitment methods, and opportunities and constraints for training. They argue that extension should be designed to address social advantages and disadvantages. When social relations are the focus of extension, it is more likely that conditions will be created that will make extension services more empowering for women (Mudege et al., 2016).

Jafrey and Sulaiman, argue that "demand-led gender-sensitive approaches" for rural women need to be developed and also propose a 'New Consultative Design Process' (NCDP)" for the implementation of extension services to women farmers (Jafrey and Sulaiman, 2015). The NCDP is different, because rather than designing extension services with a top-down, donor-focused approach, extension services would be designed based on data collected in a three-stage approach which focuses on the feedback and networks of women farmers (Jafrey and Sulaiman, 2013a, p. 473). The authors conducted a pilot study of the NCDP process in three areas of rural India, which were assessed through participatory group interviews. Findings included that current interventions aimed at women were "subsidy and input focused," which did not provide the proper support or education for women to adopt them; furthermore, the interventions were "supply-led" rather than "demand-driven," which meant that women were not receiving the interventions they articulated were most necessary (Jafrey and Sulaiman, 2013a, p. 479). Current interventions were also found to benefit more well-off women farmers, leaving poorer women

further marginalized. In contrast, the NCDP approach allows for feedback from various stakeholders, helping to ensure that more women can benefit from extension services that they actually want and need (Jafrey and Sulaiman, 2013a).

Kantor, Morgan and Choudhury conducted fieldwork in Bangladesh, to explore how gender affected adoption of aquaculture innovation, as well as how or if adopting innovations effected power dynamics and relationships (Kantor, Morgan and Choudhury, 2015). Findings were based on focus groups and in-depth interviews with adopters of innovations and other key informants. Agricultural research for development (AR4D) has a focus on "innovation, learning, and action processes" (Kantor, Morgan and Choudhury, 2015, p. 295). However, the authors note that "while there is increasing agreement that gender and social inequalities matter to agricultural development outcomes, there is less consensus around how to intervene in the sector to address these inequalities" (Kantor, Morgan and Choudhury, 2015, p. 294). Since AR4D" seeks to bring together analysis, action, and change across multiple levels of spatial, economic, and social organization," (Kantor, Morgan and Choudhury 2015, p. 295), the authors argue that it is already amenable to addressing gender inequality. Yet, financial or time constraints, as well as a lack of capacity to perform gender-based analysis can limit gender-transformative approaches; however, it remains crucial to address the actual causes of gender-based inequality, rather than simply the symptoms (Kantor, Morgan and Choudhury, 2015). For example, the fish-cage aquaculture the authors studied was targeted at women; however, many women's husbands ultimately decided whether or not their wives could continue with the training necessary to implement the innovation. Furthermore, despite ownership of the innovation being intended for women, it was often only a fact on paper; women often became bystanders to the fish-cage aquaculture and were not able to make decisions about it (Kantor, Morgan and Choudhury,

2015). Thus, the authors argue that without meaningful shifts in the social system itself, the distribution of the benefits of AR4D will remain unequal. In these cases, gender-transformative approaches are necessary because they address gender inequality at its roots.

7. Conclusion

The literature is particularly glaring on the implications for gender integration in extension in the Middle East and North Africa (MENA) region. While most of the literature in Sub Saharan Africa, for example, shows that women and men have their own plots (for example, Farnworth and Colverson, 2015; Bezner Kerr, 2008; Najjar et al., 2016a), women in the MENA region often work only on farms owned or managed by their male kin (Galie, 2013; Najjar et al. 2016b). Even when women are increasingly farming in the region due to male outmigration and limited financial gains from farming, they have limited decision-making power and visibility vis-à-vis extension and development programs (see, Martini, 2003, for example). As such, they are more vulnerable to being excluded from extension programs as being helpers rather than farmers in their own right (Galie, 2013; Najjar et al.; 2016b). Another issue specific to the region is that the government is often the sole player in agricultural extension and NGOs and the private sector have less important roles than in other parts of the world.

The importance of gender transformative approaches to extension services are stressed in much of the literature as being able to effectively address the issue of gender inequality because they focus on what causes inequality rather than the symptoms of inequality (Beuchelt and Badstue, 2013; Farnworth and Colverson, 2015; Hillenbrand et al., 2015; Kantor, Morgan, and Choudhury, 2015; Njuki, Parkins and Kaler, 2016). These findings indicate that gender transformative approaches are likely to be deeply important to meaningful adoption of innovation and extension services.

8. References

Abdelali-Martini, M., Goldey, P., Jones, G., and Bailey, E. (2003). Towards a feminization of agricultural labour in northwest Syria. *The Journal of Peasant Studies, 30*(2), 71-94.

Ainembabazi, J.H. and Mugisha, J. (2014). The role of farming experience on the adoption of agricultural technologies: evidence from smallholder farmers in Uganda. The Journal of Development Studies, 50(5), 666-679.

Alex, J.P. (2013). Powering the women in agriculture: lessons on women-led farm mechanization in South India. *The Journal of Agricultural Education and Extension, 19*(5), 487-503.

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G. and Vaz, A. (2013). The women's empowerment in agriculture index. *World Development, 52*, 71-91.

Anandajayasekeram, P., Puskur, R. Workneh, S. and Hoekstra, D. (2008). *Concepts and Practices in Agricultural Extension: A Source Book.* Washington: IFPRI (International Food Policy Research Institute) and Nairobi: ILRI (International Livestock Research Institute).

Beuchelt, T.D. and Badstue, L. (2013). Gender, nutrition and climate-smart food production: opportunities and trade-offs. *Food Security, 5*, 709-721.

Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., Mbabu, A., Spielman, D.J., Horna, D., Benin, S. and Cohen, M. (2009). From best practice to best fit: a framework for designing and analyzing pluralistic agricultural advisory services worldwide. *The Journal of Agricultural Education and Extension, 15*(4), 341-355.

D'Exelle, B. and Holvoet, N. (2011). Gender and network formation in rural Nicaragua: a village case study. *Feminist Economics, 17*(2), 31-61.

Davis, K., Nkonya, E., Kato, E., Mekonnen, D.A., Odendo, M., Miiro, R., and Nkuba, J. (2012). Impact of farmer field schools on agricultural productivity and poverty in East Africa. *World Development, 40*(2), 402-413.

Due, J. M., Magayane, F., and Temu, A. A. (1997). Gender again—Views of female agricultural extension officers by smallholder farmers in Tanzania. *World Development, 25*(5), 713-725.

Ezumah, N. N., and Di Domenico, C. M. (1995). Enhancing the role of women in crop production: A case study of Igbo women in Nigeria. *World Development, 23*(10), 1731-1744.

FAO. 2011. The State of Food and Agriculture. Women in Agriculture. Closing the gender gap for development. FAO, Rome.

Farnworth, C.R. and Colverson, K.E. (2015). Building a gender-transformative extension and advisory facilitation system in Sub-Saharan Africa. *Journal of Gender, Agriculture and Food Security. 1*(1), 20-39.

Galie, A. (2013). *The Empowerment of Women Farmers in the Context of Participatory Plant Breeding in Syria: Towards Equitable Development for Food Security* (Doctoral Dissertation). Wageningen: Wageningen University.

Gundu Shibanda, G., and Ingado Seru, J. (2002). Human resource strategy for Kenyan women smallholders. *Women in Management Review, 17*(6), 285-296.

Higgins, K., Bond, R., and Kindornay, S. (2014). *Measuring Progress Post-2015: An Assessment of Proposals* (research report). The North-South Institute.

Hillenbrand, E., Karim, N., Mohanraj, P. and Wu, D. (2015). Measuring gender-transformative change: a review of literature and promising practices. CARE USA. Working Paper.

Jafrey, T. and Sulaiman, R. (2013a). Gender-sensitive approaches to extension programme design. *The Journal of Agricultural Education and Extension, 19*(5), 469-485.

Jafrey, T. and Sulaiman, R. (2013b). Gender inequality and agricultural extension. *The Journal of Agricultural Education and Extension, 19*(5), 433-436.

Kabeer, N. (2012). *Women's Economic Empowerment And Inclusive Growth: Labor Markets And Enterprise Development* (research report). Department for International Development (DFID) UK, International Development Research Center (IDRC).

Kantor, P., Morgan, M. and Choudhury, A. (2015). Amplifying outcomes by addressing inequality: the role of gender-transformative approaches in agricultural research for development. *Gender, Technology and Development, 19*(3), 292-319.

Kingiri, A.N. (2013). A review of innovation systems framework as a tool for gendering agricultural innovations: Exploring gender learning and system empowerment. *The Journal of Agricultural Education and Extension, 19*(5), 521-541.

Kristjanson, P., Harvey, B., Epp, M.V. and Thornton, P.K. (2014). Social learning and sustainable development. *Nature Climate Change*, 4, 5-7.

Lambrecht, I., Vanlauwe, B., Maertens, M. (2016). Agriculture extension in Eastern Democratic Republic of Congo: Does Gender Matter? *European Review of Agricultural Economics, 43*(5), 841-874.

Lamontagne-Godwin, J., Williams, F., Thilakasiri Bandara, W.M.P., Appiah-Kubi, Z. (2017). Quality of extension advice: a gendered case study from Ghana and Sri Lanka. *The Journal of Agricultural Education and Extension, 23*(1), 7-22.

Mayoux, L. (1995). Beyond naivety: women, gender inequality and participatory development. *Development and Change, 26*, 235-258.

McEwan, C. and Beck, D. (2006). (Re)politicizing empowerment: lessons from the South African wine industry. *Geoforum, 37*, 1021-2034.

Meinzen-Dick, R., van Koppen, B., Behrman, J., Karelina, Z., Akamandisa, V., Hope, L. and Wielgosz, B. (2012). Putting Gender on the Map: Methods for Mapping Gendered Farm Management Systems in Sub-Saharan Africa. International Food Policy Research Institute (IFPRI).

Mudege, N. N., Nyekanyeka, T., Kapalasa, E., Chevo, T., and Demo, P. (2015). Understanding collective action and women's empowerment in potato farmer groups in Ntcheu and Dedza in Malawi. *Journal of Rural Studies*, *42*, 91-101.

Mudege, N.N., Chevo, T., Nyekanyeka, T., Kapalasa, E. and Demo, P. (2016). Gender norms and access to extension services and training among potato farmers in Dedza and Ntcheu in Malawi. *Journal of Agricultural Education and Extension, 22*(3), 291-305.

Najjar, D., Abubakar, F., and Alma, E. (2016a). Gender Roles and Relations in the Wheat Production of Nigeria: Strengthening the Participation of Women. ICARDA Working Paper.

Najjar, D., Abdallah, I., and Alma, E. (2016b). Gender Roles and Relations in the Wheat Production of Sudan: Strengthening the Participation of Women. ICARDA Working Paper.

Njuki, J., Parkins, J.R. and Kaler, A. (Eds.) (2016). *Transforming Gender and Food Security in the Global South*. New York: Routledge.

Percy, R. (1999). Gender analysis and participatory rural appraisal: assessing the current debate through an Ethiopian case study involving agricultural extension work. *International Journal of Educational Development*, *19*(6), 395-408.

Percy, R. (2005). The contribution of transformative learning theory to the practice of participatory research and extension: Theoretical reflections. *Agriculture and human values*, *22*(2), 127-136.

Peterman, A., Quisumbing, A., Behrman, J. and Nkonya, E. (2011). Understanding the complexities surrounding gender differences in agricultural productivity in Nigeria and Uganda. *Journal of Development Studies, 47*(10), 1482-1509.

Pretty, J. N. (2002). *Agri-culture: Reconnecting people, land, and nature*. Routledge.

Quisumbing, A.R. and Pandolfelli, L. (2010). Promising approaches to address the needs of poor female farmers: resources, constraints and interventions. *World Development, 38*(4), 581-592.

Ragasa, C., Berhane, G., Tadesse. F. and Taffesse, A.S. (2013). Gender differences in access to extension services and agricultural productivity. *The Journal of Agricultural Education and Extension, 19*(5), 437-468.

Spaling, H., Montes, J., and Sinclair, J. (2011). Best practices for promoting participation and learning for sustainability: lessons from community-based environmental assessment in Kenya and Tanzania. *Journal of Environmental Assessment Policy and Management, 13*(03), 343-366.

Spielman, D.J., Davis, K., Negash, M. (2011). Rural innovations systems and networks: findings from a study of Ethiopian smallholders. *Agriculture and Human Values, 28*, 195-212.

Szonyi, J. and Blum, M. (2012). *Investment Requirement In Agricultural Research And Extension (2010-2025) To Achieve Zero-Hunger And Adapt To Climate Change*. FAO (Food and Agriculture Organization of the United Nations).

Thabet. B., Dhehibi, B., Kassam, S., Aw-Hassan, A. (2015). Good intentions and hard realities: achievements and challenges in agricultural extension systems in Tunisia. *International Journal of Agricultural Extension, 3*(3), 209-216.

Touayi, M. (n.d.) *Agricultural Extension in Tunisia: Development Perspectives*. Sub-regional workshop on Application of ICT for Enhancement of Extension Linkages, Coordination and Services. Agriculture and Extension Training Agency – Tunisia.

World Bank; Food and Agriculture Organization; International Fund for Agricultural Development. 2009. Gender in Agriculture Sourcebook. Agriculture and Rural Development;. Washington, DC : World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/6603 License: CC BY 3.0 IGO.