



Available Online at ESci Journals

International Journal of Agricultural Extension

ISSN: 2311-6110 (Online), 2311-8547 (Print)

<http://www.escijournals.net/IJAE>

THE ROLE OF AGRICULTURAL EXTENSION IN AFRICA'S DEVELOPMENT, THE IMPORTANCE OF EXTENSION WORKERS AND THE NEED FOR CHANGE

^aCatherine P. Msuya, ^bFestus K. Annor-Frempong, ^cMargaret N. Magheni, ^dRobert Agunga, ^dChris O. Igodan*,
^eAdemola A. Ladele, ^fKeba Huhela, ^fNelson M. Tselaesele, ^gHenry Msatilomo, ^gClodina Chowa, ^hElliot Zwane,
ⁱRichard Miir, ⁱChristopher Bukeyn, ^jLaetitia A. Kima, ^jMajory Meliko, ^kAmadou Ndiaye,

^a Sokoine University of Agriculture, Tanzania.

^b University of Cape Coast, Ghana.

^c Makerere University, Uganda.

^d The Ohio State University, USA.

^e University of Ibadan, Nigeria.

^f Botswana College of Agriculture, Botswana.

^g Ministry of Agriculture and Food Security, Malawi.

^h University of Limpopo, Polokwane Area, South Africa.

ⁱ Makerere University, Uganda.

^j University Institute of the Diocese of Buea, Cameroon.

^k University of Senegal.

ABSTRACT

Agriculture is generally referred to as the mainstay of African economy, the real driver of economic growth. Agricultural extension plays a critical role in African development by bringing the farming community information on new technologies, which they can adopt to increase productivity, incomes and standards of living. Therefore, extension staffs are key players in the development process. However, extension systems in Africa face numerous challenges, which, in turn limit their effectiveness in promoting smallholder farmers' productivity. This study by an emerging Africa Extension Reform Group (AERG) was carried out to determine issues and challenges facing extension personnel in Africa. The researchers interviewed 393 extension staffs at the district, sub-district and grass root levels in nine countries, namely, Ghana, Botswana, Tanzania, Cameroon, Senegal, Malawi, South Africa, Uganda, and Nigeria. Although the study is not generalizable to Africa or even the countries of study, it does help identify critical issues and challenges facing extension in Africa. The study looked at issues, such as job satisfaction; use of Information and Communication Technologies, types of extension methods practiced; and communication and other training needs. The researchers found that the challenges of extension were similar across countries, suggesting that a common solution was possible. In particular, the study found that in addition to their training in agriculture extension agents need training in development and communication to help them cope with the increasing sophistication of development in programming. The findings call for re-thinking the reformation of extension at two levels: a) re-examining extension training at the university level; and b) re-positioning extension in the field such that it serves as a neutral facilitator of development across sectors. At the moment, extension systems are so married with agriculture that other sectors do not see them as un-biased knowledge facilitators.

Keywords: Extension, Africa's Development, Change

INTRODUCTION

Agriculture is, and for many years to come, will remain the mainstay of the economy of many African countries since it contributes substantially to the gross domestic product (GDP) and exports earnings of these countries. In Tanzania, agriculture contributes about 50 percent of the GDP and 75 percent of export

earnings (Leyaro & Morrissey, 2013). In Uganda, agriculture contributes approximately 37% of the Gross Domestic Product (GDP) and 19% of the country's exports. In Ethiopia, it accounts for about 47% of GDP, and 60% of export earnings (World Bank, 2011). The CIA World Fact Book (2012) reported that the agricultural industry contributed 28.3% towards Ghana's GDP in 2011.

In South Africa, although the contribution of 3% to total GDP is relatively small share, agriculture remains a

* Corresponding Author:

Email: igodan.1@osu.edu

© 2017 ESci Journals Publishing. All rights reserved.

significant provider of employment, especially in the rural areas and a major earner of foreign exchange. It is also a source of food and provides employment opportunities to the majority of Sub Saharan African population (Diao *et al.*, 2007). For example about 75 percent of Tanzanians who reside in rural areas depend on agriculture as their main source of employment (Amani, 2005). The sector is dominated by smallholder farmers. These farmers make up almost 90 percent of the population (Rutatora & Mattee, 2001; Kabuye & Mhango, 2006). They cultivate an average farm size of 0.9 to 3.0 hectare each (Leyaro and Morrissey, 2013). This makes smallholder farmers a critical component for establishing economic growth in the region.

In order to improve agricultural productivity as well as improving rural development, agricultural extension has a great role to play. For example, extension is the smallholder farmers' gateway to information on new farming technologies developed outside their narrow environments. Given the low level of literacy of smallholder farmers, the need for extension staff will continue in Africa for a long time. African governments supported by international aid organizations, have invested fairly heavily in agricultural extension since independence in the 1960s. From the mid-1970s to the late 1990s, the World Bank invested over \$4.7 billion in extension to promote its "Training and Visit (T & V) system" and agricultural research throughout the developing world including Africa (Hayward, 1989; Purcell & Anderson, 1997).

The T&V was promoted as an integral part of the World Bank's "Integrated Rural Development Programs" (IRDPs), which spread all over Africa from the 1970s to the late 1990s (Amoako-Tuffour & Armah, 2008). By the late 1990s, however, The World Bank abandoned its IRDPs as ineffective and with that the T&V system. The World Bank subsequently introduced the Poverty Reduction Strategy Programs" (PRSPs) and "pluralistic and demand-driven extension" as the accompanying model (Davidson & Ahmad, 2003; Malawi Ministry of Agriculture & Irrigation, 2000). The World Bank invested \$150 million in Nigeria's extension alone from 2007 to 2010 (World Bank, 2007, 2010).

Despite these efforts, the agricultural extension systems in most African countries agricultural have faced a number of challenges that have rendered them largely ineffective (Rutatora & Mattee, 2001; Davidson & Ahmad, 2003; Rolings & Jiggins, 2009). Due to this fact,

a group of patriotic scholars called the "Africa Extension Reform Group" (AERG) is determined to strengthen African extension through a systematic or social scientific approach to extension. As a necessary first step, the group conducted a continent-wide survey aimed at assessing the constraints of extension workers, which will enable the group to make a strong case for an alternative approach to extension programming, organization, and practice in Africa.

Objectives of the study: The main objective of the study was to assess constraints of extension workers in Africa. Our conviction was that the problems are similar countries, and, therefore, by implication, a common solution can be found. Specifically the survey sought to:

1. Determine the demographic characteristics of extension workers in Africa;
2. Understand problems of extension workers, especially at the grass roots;
3. Examine extension workers' access and ability to use information and communication technologies in extension; and
4. Determine the capacity building needs of extension workers.

METHODOLOGY

The study was conducted in nine (9) African countries including Ghana, Tanzania, Botswana, Cameroon, Senegal, Malawi, South Africa, Uganda, and Nigeria. These are the countries, where members of the Africa Extension Reform Group emanated. Many of them were professors or lecturers in agricultural extension departments or personnel from the ministries of agriculture. A cross sectional research design was employed in collecting data from 393 extension staff who operate at the village, sub-district, district and regional levels (Babbie, 1990). Given the constraints faced in each country, researchers were encouraged to use methodologies suitable to their circumstances. In some countries, multistage sampling technique was used whereas in others purposive or convenient sampling was done. Thus, the variation in research methodology can be considered as a weakness of the study. Data collection in each case was done using a standard questionnaire, which was developed in English and translated into French for use in French-speaking countries like Senegal and Cameroon. The questionnaires were distributed through district extension offices or emailed as attachments. Data were analyzed by using the SPSS (Statistical Package for Social

Sciences) computer program. Descriptive statistics such as frequencies, percentages and means were generated to describe the data.

RESULTS AND DISCUSSION

Background Characteristics of Respondents: The results in Table 1 show that the majority of extension staff interviewed were married men. According to International Labor Organization ILO (2007) and URT (1997) women play a greater role in many development activities, including agricultural production. However, they are less privileged in a number of aspects including their lack or level of education that hinder them from occupying various job positions including agricultural extension.

This is reflected in the results in Table 1, which show that the majority of respondents were male (72%) who outnumbered the females (28%). This grassroots extension staffs operates at the village and sub-district levels. Seventy two percent (72%) of respondents reside in the same operational area. About half of them indicated speaking the local language as well as the national language. In addition, respondents indicated they had experience in rural life because they were born and raised in rural settings, which makes it easier for them to deliver extension services to farmers. However, they acknowledged, that they have no exposure to extension work outside their regions and countries where they live and work.

Table 1. Distribution of the respondents according to their background characteristics.

Gender	Frequency	Percent
Male	283	72.0
Female	110	28.0
Total	393	100.0

As far as work experience is concerned, the respondents indicated they have worked between 5 months and 38 years with an average work experience of 12 years. On the average, the number of years since grassroots extension agents completed the highest level of education is about 9 years in the range of 0 to 39 years. The researchers investigated whether grassroots extension agents had attended any in-service training or professional development workshops in the past two years. The results in Table 2 show that 18.5% of

respondents had not attended any in-service training or professional development workshops in the past two years. About half of the respondents (50.1%) had participated in 1 to 3 in-service training or professional development workshops in the past two years and 30% of respondents had participated in four (4) or more in-service training in the past two years. This implies that The Extension agents lacked frequent in-service or professional development training, which is important for their job performance.

Table 2. The number of in-service training or professional development workshops respondents had attended in the past two years.

Training	Frequency	Percent
None	71	18.5
1	76	19.7
2	77	20.0
3	40	10.4
4 or more	121	31.4
Total	385	100.0

Table 3 shows the content of in-service training programs attended by respondents. The majority of the respondents (66.6%) indicated that the content of training generally covered agricultural subjects or topics but a few of them had been trained in other aspects of communication skills (29.1%), leadership and supervision (28.6%), administration and management (26.3%). This implies that the content of in-service

training had mostly been devoted to the technical areas of agriculture at the expense of critical social aspects such as ICTs, in particular, and communication in general. Additionally, ICT enables Extension agents to fulfill their roles as coordinators of the multifunctional multi-stakeholder extension systems. Also missing, is training in emerging issues, including climate change, gender, and entrepreneurship.

Table 3. General content of the training.

Content	N	%
Generally, it covered agricultural subjects/topics.	263	66.6
Generally it covered communication skills.	115	29.1
Generally, it covered leadership/supervision issues	113	28.6
Generally, it covered administration/management issues	104	26.3

Extension in development: Agricultural extension is critical to agricultural and rural development. It provides the channel for addressing farmers' problems by identifying research and policy modifications that benefit rural communities (Spielman & Birner, 2008). Christoplos (2008) adds that the extension system provides a framework through which farmers are organized in functional groups in order to gain access to production resources such as credit, inputs, marketing

services and information on government development programs.

It also provides the farming community with information and new technologies (Van Mele, 2007). In connection to these, extension agents were requested to indicate their knowledge on the roles of extension in development (Table 4). Generally, the results in Table 4 show that Extension agents are knowledgeable about the roles of extension in development.

Table 4. Extension Agents' knowledge of the roles of extension in development.

Aspect of extension	Goals (%)			
	N	Yes	NO	Don't Know
Increasing agricultural production	374	92.0	3.2	4.8
Improving rural livelihoods	374	89.1	7.5	3.5
Facilitating linkage between research centers and farmers	370	88.6	7.0	4.3
Facilitating integrated rural development/ poverty reduction strategy programs	380	88.2	9.2	2.6
Mobilize the youth for agricultural and rural development	374	86.9	6.4	6.7
Promoting climate change education	367	86.9	6.5	6.5
Promoting gender equity or women's participation in development	372	86.6	6.2	7.3
Helping smallholder farmers adopt agricultural innovations	378	82.8	14.3	2.9
Collaborating with NGOs	371	81.9	12.4	5.7
Promoting smallholder farmers' participation in development decision-making	378	79.4	15.1	5.6
Reducing the HIV&AIDS pandemic	370	76.8	15.9	7.3
Facilitating holistic development	367	76.3	11.4	12.3
Narrow the farmers to agent ratio	364	72.3	16.2	11.3
Helping farmers gain access to credit/farm inputs/markets	374	71.7	18.7	9.6
Facilitating coordination across departments in the Ministry of Agriculture	374	71.7	18.7	9.6
Advising government on extension policy	372	71.2	18.0	10.8
Facilitating coordination across other sectors of government	372	71.2	18.0	10.8
Make extension financially self-sustainable/cost recovering	370	68.4	17.3	14.3

In Table 4, more than 80% of the respondents indicated that the role of extension is to increase agricultural production, improving rural livelihoods, facilitating linkage between research centers and farmers, facilitating integrated rural development/ poverty reduction strategy programs and mobilizing the youth for agricultural and rural development. Others included promoting climate change education, promoting gender equity or women's participation in development, helping smallholder farmers to adopt agricultural innovations

and collaborating with NGOs as part of extension's role. Since extension agents are very important in making these happen, they were asked to indicate their perceived level of achievement of extension roles.

Using a scale on achievement of "Not very well Achieved" to "Very well Achieved," the majority felt extension has not achieved much. Table 5 shows that extension has not helped farmers to increase agricultural production, gain access to credit/farm inputs/markets, promoted gender equity or women's

participation in development, collaborated with NGOs, or facilitated linkage between research centers and farmers. Extension agents also felt they have not succeeded in achieving their goals with educational programs in reducing the HIV& AIDS pandemic, promoting climate change education, improving rural livelihoods, promoting smallholder farmers' participation in development decision-making and helping smallholder farmers adopt agricultural innovations. Others included failure to facilitate well the approach to holistic development, mobilizing the youth for agricultural and rural development, facilitating

integrated rural development/ poverty reduction strategy programs, facilitating coordination across other sectors of government, facilitating coordination across departments in the Ministry of Agriculture, narrowing the farmers to agent ratio, advising government on extension policy and making extension financially self-sustainable/cost recovering. These findings are supported by Swanson & Rajalahti (2010) who contend that although agricultural extension is generally crucial in improving agricultural productivity and rural development, extension has over a number of years failed to achieve its roles effectively.

Table 5. Perceived level of achievement of extension roles in development.

Aspect of extension	Perceived Level of Achievement (%)							Mean	SD
	N	NVWA	NWA	NA	A	WA	VWA		
Increasing agricultural production	380	11.3	23.4	17.4	29.7	14.2	3.9	3.24	1.36
Helping farmers gain access to credit/farm inputs/markets	381	15.0	23.1	21.6	26.2	10.2	3.9	3.13	2.05
Promoting gender equity or women's participation in development.	381	12.3	22.6	19.9	32.3	11.3	1.6	3.12	1.28
Collaborating with NGOs	373	13.7	22.3	21.2	29.8	10.2	2.7	3.08	1.32
Facilitating linkage between research centers and farmers	380	12.6	25.0	18.2	33.2	7.1	3.7	3.07	1.32
Reducing the HIV&AIDS pandemic.	363	15.2	22.9	20.7	26.2	12.7	2.5	3.06	1.35
Promoting climate change education	364	18.1	21.2	23.4	21.7	10.7	4.9	3.01	1.43
Improving rural livelihoods.	377	20.8	22.5	29.7	19.4	6.4	0.8	3.01	1.28
Promoting smallholder farmers' participation in development decision-making.	383	12.8	31.9	15.9	27.2	8.4	3.9	2.98	1.34
Helping smallholder farmers adopt agricultural innovations.	385	9.4	37.9	12.2	31.7	5.7	3.1	2.95	1.26
Facilitating holistic development.	370	15.4	23.0	28.1	22.7	7.0	3.5	2.95	1.37
Mobilize the youth for agricultural and rural development.	381	17.1	22.6	27.8	24.1	7.3	1.0	2.85	1.23
Facilitating integrated rural development/ poverty reduction strategy programs.	377	12.5	36.6	18.6	21.5	8.5	2.4	2.84	1.27
Facilitating coordination across other sectors of government.	327	17.4	21.7	31.2	22.0	5.8	1.8	2.83	1.23
Facilitating coordination across departments in the Ministry of Agriculture.	361	19.4	23.8	25.8	21.6	7.5	1.9	2.80	1.29
Narrow the farmers to agent ratio.	360	11.7	28.1	21.5	25.7	10.9	1.9	2.69	1.23
Advising government on extension policy	377	25.7	18.0	27.6	21.5	5.3	1.9	2.68	1.30
Make extension financially self-sustainable/cost recovering.	372	23.4	23.4	31.2	15.1	6.2	0.8	2.59	1.22
Composite								2.94	1.34

It was of interest to enquire about extension agents' satisfaction with their job because it has a direct link with their ability to perform their roles effectively to achieve extension goals. The results show that extension agents generally seemed satisfied with their achievements as change agents. However, any satisfaction was limited by their concerns regarding their low levels of education, low opportunities for higher education, lack of opportunities for short-term training, low salary and lack of incentives related to the job and resources to work with and the poor cooperation they get from other government ministries. These call for the need to examine areas for inter-sector collaboration or interaction with NGOs.

Extension approaches/Methods and their development: For effective delivery of extension services, various extension approaches / methods have been put in place and these are but not limited to the demand-driven, the pluralistic extension system, training and visit (T & V), Non - governmental extension system (NGO), commodity based extension, farmer field schools, and farmer to farmer (Benor & Baxter, 1984; URT, 2009; Phelen *et al.*, 2011). In the survey, extension agents were asked to indicate their level of agreement about various extension methods/approaches introduced and their development. Generally, the extension agents varied in their opinion concerning the methods/approaches of extension delivery (Table 6). More than half (53.9%) of extension agents agreed that extension methods are changing too frequently but the majority (64.3%) complained that they are not well trained on how to implement these ever-changing extension approaches/methods. The legend of the scale

for the perceived level of agreement (Table 6) ranged from "Very Strongly Disagree" to "Very Strongly Agreed". The extension agents noted the main extension methods such as demand-driven and pluralistic extension systems have not been successful. Non-Governmental Organization (NGO) extension is perceived by extension agents to be more effective than public sector extension. They noted, however, that NGOs tend to cover smaller geographic areas. Extension workers believed the Training and Visit (T&V) system was scientifically tested, but were divided in their opinion about its success. It was not clear if they understood scientific testing of extension models. These findings are consistent with Davis (2008) who reported that although many extension approaches have been introduced in Africa, they have failed to meet their goals effectively as planned. It was reported that Extension agents are often not informed when their countries are introducing changes in extension approaches and methods. Extension agents indicated they are not adequately trained or given the necessary orientation to enable them implement new approaches, notably the demand-driven extension and pluralistic extension methods. Extension agents were of the opinion that agricultural extension performs better if it remains as a Department under the Ministry of Agriculture. However, Extension workers need to have adequate knowledge and skills to coordinate and link their activities to other agricultural sectors of the Ministry of Agriculture. Our contention is that if extension is to facilitate development across sectors then it needs to be located at a neutral ground, not under agriculture where other sectors would feel it does not belong to them.

Table 6. Perception of Extension Agents towards Extension Approaches/Methods and their developments.

Extension Methods	Perceived level of agreement (%)									
	N	VSD	SD	SWD	SWA	SA	VSA	Mean	S D	
The demand-driven extension system has been tried in my country.	383	7.8	15.4	15.9	25.6	21.4	13.8	3.79	1.49	
The pluralistic extension system has been tried in my country.	379	7.1	11.3	19.5	31.9	19.3	10.8	3.77	1.37	
Extension workers have no say on what extension system is introduced in their country.	386	11.4	17.6	13.0	20.5	15.8	21.8	3.77	1.69	
The Training and Visit System was not successful in my country.	382	5.2	15.4	28.8	27.0	16.2	7.3	3.56	1.28	
Extension methods are changed too frequently.	364	6.3	19.0	20.9	29.1	16.8	8.0	3.55	1.35	

NGO extension is more effective than public sector extension.	384	10.9	14.8	22.9	26.6	16.1	8.6	3.48	1.43
The pluralistic extension system was successful in my country.	376	7.2	15.2	27.1	29.8	16.0	4.8	3.47	1.26
The demand-driven extension system was successful in my country.	381	9.2	17.3	22.6	32.0	14.4	4.5	3.39	1.30
The T & V System was not scientifically tested in my country.	369	7.3	24.4	23.8	23.6	14.6	6.2	3.33	1.35
The privatization of extension is mainly the result of a lack of confidence in public extension	386	17.1	23.6	18.9	20.5	13.0	7.0	3.10	1.51
Extension workers are not trained on how to implement extension methods	389	21.1	24.7	18.5	16.5	10.0	9.3	2.97	1.58
Small farmers can afford to pay for privatized extension services	385	33.5	24.9	13.0	18.2	6.5	3.9	2.51	1.47

Extension communication and use of ICTs: Communication is one of the most important aspects of effective extension delivery. According to the World Bank Report (2007), communication is crucial for addressing extension problems related to participation,

integration, capacity building, decentralization, and sustainability as human dimension. Based on this understanding, the extension agents were requested to indicate their opinion about extension communication and use of ICTs as summarized in Table 7.

Table 7. Perception of Extension Agents towards Extension communication.

Communication	Perceived level of agreement (%)								
	N	VSD	SD	SWD	SWA	SA	VSA	Mean	S D
Communication is necessary for building linkages	389	1.3	.5	1.5	6.4	40.6	49.6	5.33	0.87
Communication is necessary for participation.	385	1.0	.8	1.8	10.1	41.0	45.2	5.25	0.90
Development facilitators need communication training.	382	1.0	.5	2.9	14.4	34.6	46.6	5.21	0.95
Communication is necessary for coordination.	388	1.3	2.1	5.2	9.5	37.6	44.3	5.13	1.06
Virtually all development ministries have need for communication.	384	1.0	2.3	4.7	14.6	32.8	44.5	5.09	1.07
Communication is necessary for integration.	388	2.3	1.8	3.1	11.9	39.4	41.5	5.09	1.09
Communication is essential for decentralization.	383	1.3	1.6	4.4	18.3	37.6	36.8	5.00	1.04
Communication brings development partners together.	386	2.3	1.0	5.2	13.7	40.9	36.8	5.00	1.09
Communication is at the heart of development.	384	1.6	4.2	6.0	16.7	34.4	37.2	4.90	1.18
I feel confident in my ability to speak in public.	389	2.3	4.4	6.4	17.5	37.3	32.1	4.79	1.22
Community radio spreads information to rural areas not covered by extension.	383	3.9	5.7	8.1	18.8	30.8	32.6	4.65	1.36
Extension workers get adequate training in communication.	386	4.1	9.6	14.2	26.2	27.5	18.4	4.18	1.37

According to the data in Table 7, the majority of extension agents acknowledged the importance of communication in the various aspects investigated, including building linkages, coordination and

integration. Extension agents felt that communication is pivotal to development because it brings development partners together and agreed that all ministries involved in development have need for communication for

development. For effective extension communication, over the past 10 years, there has been a remarkable progress in the use of Information Communication Technologies (ICTs) in African agriculture, especially in the area of farmers' access to market information (URT, 2003). Various projects have been developed that integrate ICTs into the dissemination of agricultural information to farmers.

ICTs are thus playing a significant role in enhancing social and economic development (Isaya *et al.*, 2016). Although this is the case, more than half of the respondents (Table 8) do not own or have access to ICT for extension, except for land-line phones, e-commerce, fax, skype and e-discussion/list serve/ newsgroup.

Table 8. Ownership or access (available) to ICT for extension.

Type of ICT	Own or Have access (%)		
	N	Yes	No
Landed phone	373	57.4	42.6
e-Commerce	321	55.5	44.5
Fax	323	54.5	45.5
Skype account	326	53.4	46.6
e-discussion/list serve/ newsgroup	321	53.0	47.0
e-agriculture news	323	49.8	50.2
Cell phone	380	48.4	51.6
MP3/4 Players	372	48.1	51.9
Web site of Ministry of Agriculture	369	48.0	52.0
Laptop	381	46.5	53.0
Community Radio Programming	318	46.4	53.6
Facebook	376	46.3	53.7
Twitter	369	46.3	53.7
LCD projector	324	46.0	54.0
LinkedIn	366	45.9	54.1
Television set	376	45.2	54.8
Internet in cyber café.	365	44.9	55.1
Video camera	324	43.8	56.2
Word-processors (e.g. Word, WordPerfect)	324	43.8	56.2
Internet/ WWW in office.	378	43.4	56.6
Desktop/Office computer	374	42.8	57.2
E-mail software (outlook, yahoo, hotmail, gmail)	384	42.7	57.3
Spreadsheets (e.g. Excel, Lotus) software	325	42.2	57.8
Video cassette recorder/player	378	41.3	58.7
Statistical Analysis Software (SPSS, SAS, Minitab)	322	41.3	58.7
Radio set	375	41.1	58.9
Presentation software (e.g. PowerPoint)	325	40.6	59.4
Video/Digital camera	374	38.2	61.8
Digital / Still camera	324	36.4	63.0

Extension agents in the study do not own or have access to cell phones, mp3/4 players, website of the ministry of agriculture, laptops, community radio programming, Facebook, Twitter, LCD projectors, LinkedIn, television sets, internet in cyber café, video cameras, the Microsoft word-processors, excel spreadsheet, and internet access in their offices for extension work. Extension agents also

indicated they do not own or have access to desktop/office computer, e-mail software (outlook, yahoo, hotmail, & gmail), video cassette recorder/player statistical analysis software (SPSS, SAS, Minitab) and radio sets for extension work. Moreover, more than 60% do not have access to presentation software (e.g. PowerPoint), video camera and digital or still camera for

extension work. The study further assessed the knowledge (competency) of extension staff on the use of ICT for extension. The findings show that more than half do not have the knowledge or competency in the use of ICT for extension, except the use of e-discussion/list serve/ newsgroup, e-commerce, fax, landed phone, Skype account, e-agriculture news and LinkedIn.

Communication and ICT training need: According to the data in Table 9 extension agents acknowledged the relevance of extension communication and use of ICT in extension delivery but felt that training in communication is inadequate. More than 70% of

extension agents indicated that they need training in effective communication skills including communication planning, supervision, coordination, linkage and public relations.

Additionally, extension agents indicated they need training in ICT, integrated rural development, leadership skills, research methods, grant writing skills, assessing extension impact. Others areas of training need include extension agents' ability to involve the people in their communities in extension work, lobbying and advocacy skills, fundraising skills, communication for development and community driven-development.

Table 9. Level of importance of communication training need.

Communication training need	Perceived level of Importance (%)							
	N	VLI	LI	SI	HI	VHI	Mean	SD
Public relations skills	377	1.9	3.2	10.6	36.6	47.7	4.25	0.90
Supervision skills	379	1.6	4.2	11.1	34.3	48.8	4.25	0.92
Integrated rural development.	378	1.3	1.9	15.1	36.5	45.2	4.22	0.86
Community driven-development	375	1.6	3.2	14.4	35.7	45.1	4.19	0.91
Coordination and linkage skills.	378	1.9	2.9	15.1	35.7	44.4	4.18	0.92
Promoting gender equity	378	1.6	2.1	17.5	37.0	41.8	4.15	0.89
Listening skills.	377	5.3	2.9	10.6	37.1	44.0	4.12	1.06
Communication planning	375	2.1	2.9	14.1	42.4	38.4	4.12	0.91
Leadership skills	379	2.4	3.7	16.4	35.1	42.5	4.12	0.97
A systems view of development	379	1.1	3.2	18.2	37.5	40.1	4.12	0.89
Assessing extension impact	377	3.7	3.4	14.3	36.3	42.2	4.10	1.02
Critical analysis.	377	2.1	4.8	16.7	36.9	39.5	4.07	0.97
Computer literacy skills	376	2.1	4.5	14.6	41.2	37.5	4.07	0.94
Grant writing skills.	378	2.4	4.2	16.4	37.8	39.2	4.07	0.97
Writing skills (Write with clarity and precision).	380	4.7	3.9	11.6	39.7	40.0	4.06	1.05
Public speaking skills (Speak with a purpose	381	4.2	4.2	13.9	38.3	39.4	4.04	1.04
Ability to use statistics to make a point	378	2.6	3.7	18.5	38.1	37.0	4.03	0.97
Research methods.	379	1.6	4.2	20.1	38.3	35.9	4.03	0.93
Working with the media	376	3.2	4.3	21.0	35.1	36.4	3.97	1.02
Advocacy skills	375	3.2	6.7	16.3	39.7	34.1	3.95	1.03
A systems view of extension	377	2.7	4.2	21.8	38.2	33.2	3.95	0.98
Involving the people in extension work	376	4.5	6.1	16.5	38.8	34.0	3.92	1.07
Fundraising skills.	375	2.7	8.8	18.4	36.0	34.1	3.90	1.05
Communication for development	373	4.0	7.5	18.2	37.0	33.2	3.88	1.08
Lobbying skills	376	6.1	5.9	17.0	41.0	30.1	3.83	1.11
PowerPoint preparation	376	7.4	8.8	17.3	39.9	26.6	3.69	1.17

CONCLUSION AND RECOMMENDATIONS

The majority of the extension agents in this study were male who generally seemed to be satisfied with their achievement as extension agents. However, a number of constraints were raised that made them dissatisfied with their job performance and failure to achieve their

extension roles. These are: limited opportunities for higher education, lack of opportunities for training, low salary and lack of incentives for their jobs. Other constraints included inadequate resources for extension to work with, poor cooperation from other government ministries, ineffective extension approaches like

demand-driven and pluralistic extension approaches as well as lack of information on changes in these approaches, little or no training in how to implement new extension approaches.

A significant finding was that the problems of extension are very similar across the nine countries studied and, probably throughout the continent. They include: the paucity of extension training, failure to address increasingly complex agricultural and rural development problems, and lack of training in development and communication. It was also observed that given the interrelated nature of agricultural and rural development programs, the extension worker is asked to take a holistic approach to his or her work. Thus, the extension problem becomes not so much the dissemination of agricultural innovations but bringing development partners together to solve farmers' needs. For effective facilitation we need to distinguish between two types of extension agents: the agricultural educator, who must remain with the Ministry of Agriculture to continue education of farmers on how to raise livestock and plant crops; and the extension generalist who must be positioned on a neutral location to serve as facilitator of activities across sectors.

Thus, the knowledge and skills needed by the extension facilitator, it will seem, must include an understanding of development theory, policy and strategy, such as the Country Assistance Strategy (CAS) of major aid organizations; knowledge of communication theory and strategy is necessary to bring development partners together to discuss common issues. The fact is that extension is being increasingly recognized as the center of development activity, which requires that extension workers become more knowledgeable about the development process.

Another issue central to transforming extension in Africa, which became apparent in this study is the need for an alternative approach to extension programming, organization, and practice in Africa. As long as extension continues to be under the Ministry of Agriculture it will continue to operate in a top-down fashion. It will continue to do the bidding of the Ministry. However, for extension to operate in a bottom-up or two-way mode of communication it must operate as a neutral or stand alone institution. This means that although it can remain as a government institution it must have its own line of funding. In fact, we envisage the establishment of a Ministry for Development with extension workers as

development facilitators at the grassroots. The problem in many countries in Africa is that development policy and planning ends at the capital city. There are no institutions of development in the field to support the technical departments. Thus, agricultural development is pursued in isolation of health, gender and so forth. In fact, local assemblies are forced to take up the rural development function when they have no training in this area. Thus, under a proposed ExtensionAfrica organization, the Africa Extension Reform Group (AERG) urges the establishment of a professional extension association that will take a scientific approach to conducting extension in Africa in partnership with the African Forum for Agricultural Advisory Services (AFAAS), which has the mandate for improving extension in Africa. The need is for evidenced-based extension. Effective extension requires empiricism. A baseline needs to be set and the performances of extension services compared against this baseline. Extension workers can then be remunerated based on performance.

Another major activity called for as a result of this study is a review of extension curricula at African universities and other training centers. The quality of extension workers can be traced to the institutions that prepare them. Many governments in Africa can be credited for establishing sound extension policies. Now, is the time for extension institutions to effectively implement these policies. Extension curricula at African universities should be reviewed. In fact, AFAAS should commission this study. In the process it should be examined the extent to which culture impacts, if any, extension performance. Other areas of training need for extension include lobbying, advocacy, fundraising, integrated rural development management, communication for development and promoting community driven-development. Effective agricultural transformation in Africa requires a people-centered approach with extension at the center. The findings of this study call for re-examining extension training and education at the university and college levels and rethinking the structure and function of extension systems in Africa.

Another implicit necessity arising from this study is the need to do away with the dominant communication model, Rogers' SMCRE framework, which has served as the fodder for extension practice dating back to the 1960s. Agunga (2012) has provided an alternative framework and has challenged governments and donor

agencies to subject it to the litmus test of workability. His model shows how having extension as a stand alone institution leads to people-centered and participatory development. Finally, the importance of introducing ICTs in extension cannot be overemphasized. ICTs can help narrow the wide farmers' to agent ratio and reduce the cost of providing extension services. However, despite claims of the power of ICTs in promoting development their impact is yet to be assessed. This is another research area for extension.

In summary, the Africa Extension Reform Group (AERG) felt that the first step to transforming extension in Africa was to examine the constraints faced by extension. This study has accomplished that. The next steps are: a) reviewing the curricula of extension training at African universities; and b) establishing Extension Africa as a professional organization to examine the professional needs of extension workers. In conclusion, given the similarities of extension problems across the continent it would seem that a common solution is possible. Extension Africa can lead us to the promised land.

REFERENCES

- Agunga, R. (2012). Communication for development: A personal experience with implications for development policy. *The Journal of Agricultural Education and Extension*, 18(5), 509-524.
- Amani, H.K.R (2005). Making Agriculture Impact on Poverty in Tanzania. The Case on Non-Traditional Export Crops. Paper Presented at a Policy dialogue for Accelerating Growth and Poverty Reduction in Tanzania.
- Amoako-Tuffour, J. & B. Armah. (2008). Eds. Poverty reduction strategies in action: Perspectives and lessons from Ghana. U.K.: Lexington Books.
- Babbie, E. (1990). *Survey Research Methods*. 2nd Edition, Wadsworth Publishing Company.
- Benor, D and M. Baxter. (1984). *Training and Visit Extension*. World Bank Publication. International Bank for Reconstruction and Development, Washington, D. C.: World Bank.
- Christoplos, I. (2008). *Agricultural Extension Services and the Market*. <http://www.odi.org/resources/docs/1747.pdf>.
- Davidson, A.P. & M. Ahmad. (2003). *Privatization and the Crisis of Agricultural Extension: The Case of Pakistan*. England: Ash Gate Publishing.
- Davis, K.E. (2008). *Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects*. *Journal of Agricultural and Extension Education*, 15:3.
- Diao, X., P. Hazell, D. Resnick and J. Thurlow (2007). *The Role of Agriculture in Development: Implications for Sub Saharan Africa*. International Food Policy Research Institute, Washington DC.
- Hayward, J. A. (1989). *Agricultural Extension: The World Bank's Experience and Approaches*. Global Consultation on Agricultural Extension, 4 – 8, 1989. Rome, Italy. Food & Agriculture Organization.
- ILO (2007). *Global Employment Trends for Women Brief*: ISBN978:92-92-120136-6. 20pp.
- Isaya, E., Agunga, R. & Sanga, C. (2016). Sources of agricultural information for women farmers in Tanzania. *Information Development*, pp. 1-13, sagepub.co.uk/journals, Permissions.nav, DOI: 10.1177/0266666916675016.
- Kabuye, E.S. & J. A. Mhango. (2006). *A Brief History of Agricultural Extension Services in Malawi from June 1948 to 2000*. Ministry of Agriculture and Food Security, Malawi.
- Kothari, C. R. (2004). *Research Methodology: Method and Techniques*: 2nd Ed. New Age Int. (p) Ltd.
- Leyaro, V. & O. Morrissey (2013). *Expanding Agricultural Production in Tanzania: Scoping Study for International Growth Centre Tanzania on the National Panel Surveys Report*.
- Malawi Ministry of Agriculture and Irrigation. (2000). *Agricultural Extension in the New Millennium: Towards Pluralistic and Demand-driven Services in Malawi*. Lilongwe: Ministry of Agriculture.
- Purcell, D.L., and J.R. Anderson. (1997). *Agricultural Extension and Research: Achievements and Problems in National Systems*. Washington, D. C.: World Bank.
- Rutatora, D. F. & A. Z. Matte (2001). Major Agricultural Extension Providers in Tanzania. *African Study Monographs*, 22 (4): 155-173, December.
- Spielman, D. & R. Birner, (2008). How innovative is your Agriculture? Using Innovation indicators and Benchmarks to Strengthen National Agricultural Innovation Systems. The World Bank: Washington, DC (http://www.future-agriculture.org/farmerfirst/files/T2b_van_Mele.pdf).
- Swanson, B.E.; B.J. Farmer and R. Bahal. (1989). *The Current Status of Agricultural Extension*

- Worldwide: Global Consultation on Agricultural Extension, Rome: Italy, Food and Agriculture Organization.
- Swanson, Burton E. & Riikka Rajalahti (2010). Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems. Agriculture and Rural Development Discussion Paper 45, The International Bank for Reconstruction and Development/The World Bank, 1818 H Street, NW, Washington, DC 20433.
- United Republic of Tanzania (2007). Ministry of Agriculture, Food Security and Cooperatives, Grades and Standards in the Fertilizer Sub-Sector in Eastern and Central Africa- A Case of Tanzania: In Proceedings of a Workshop on Rationalization and Harmonization of Policies, Regulations, Procedures. (Edited by Shetto, M.C; P.M. Kawalama and V. Kisamfu). Land Mark Hotel, Dares- Salaam, Tanzania.
- URT (2009). Accelerating Pro-Poor Growth in the Context of Kilimo Kwanza (<http://www.google.co.tz>).
- URT (1997). National Agricultural and Livestock Policy: MAC, Dares Salaam. 155pp.
- Van Mele, P. (2007). The Role of International Agricultural Research Centers in Strengthening Rural Extension. (http://www.future-agriculture.org/farmerfirst/files/T2b_van_Mele.pdf).
- World Bank (2007). World Congress on Communication for Development: Lessons, Challenges and the Way Forward. Washington, DC: The World Bank, published jointly with the Food and Agriculture Organization of the United Nations and the Communications Initiative.