The Journal of Agricultural Sciences - Sri Lanka
Vol. 17, No 2, May 2022. Pp 241-257
http://doi.org/10.4038/jas.v17i2.9740

Challenges and Constraints Facing the Agricultural Extension System in Egypt

Tamer Gamal Ibrahim Mansour[1*], Mahmoud Alaa Abdelazez[1] and Khairy Hamed Eleshmawiy[1]

Received:02nd October 2021 / Accepted: 24th March 2022

ABSTRACT

Purpose: *The research aimed to identify the important problems facing the agricultural extension system in Egypt.*

Research Method: *A simple random sample was selected from the extension workers in Fayoum and Beheira governorates (196 respondents) Data collection was done from October 2020 to February 2021, using a questionnaire designed based on the framework of modernization and development of agricultural extension systems developed by FAO.*

Findings: *The results indicated that the extension organization in Egypt suffers from aging and erosion (62.2% of the surveyed agricultural extension workers are over 46 years old), 58.7% of the surveyed Extension workers were not specialized in agricultural extension. the extension workers were not sufficiently satisfied with their work. As for the important problems facing extension work in Egypt, foremost of which was the problem centralization, lack of authority delegation, absence of institutional work, absence of funding sources, weakness of the operational budget, weakness of the academic programs before service, absence of adequate training opportunities, absence of a clear and integrative mechanism to link agricultural extension with scientific research institutions, in addition to the absence of coordination with colleges of agriculture and veterinary medicine, mass media, NGOs, and private sector could be identified.*

***Research Limitation*:** *This study was based on a small sample in two governorates. Therefore, policymakers should be careful to generalize the findings to a broad context.*

Originality/ Value: *This study dealt with extension problems within the framework of modernization and development of agricultural extension systems developed by FAO, to provide officials with a vision of the most important problems and reform priorities.*

Keywords: *Agricultural extension system, constraints, Egypt, modernization, reforming*

INTRODUCTION

The agricultural sector plays an important role in increasing agricultural productivity with the aim of enhancing food security and reducing poverty in Africa (World Bank, 2007). This vital sector contributes to the Egyptian economy with an estimated growth rate of 3.2% and 14.5% of the GDP and employs 25.6% of the population. (CAPMAS, 2018). Facing the new challenges in agriculture requires strong scientific research and advanced agricultural education in addition to the agricultural extension service, which is an essential pillar for the progress of the rural community through the dissemination of modern technology among farmers (Kumara and Geetha, 2016). Agricultural extension seeks to work with farmers to help them, help themselves by acquiring modern agricultural knowledge and skills to increase their productivity and improve the standard of living (Düvel, 2004). Agricultural extension, as an applied tool adopted by those interested in the agricultural sector to develop

[1*] *Agricultural Economic Department, National Research Centre, Giza. Egypt.*
tj.mansour@nrc.sci.eg
https://orcid.org/0000-0002-8244-0119

and improve this sector, is not limited to traditional goals such as increasing production and improving it quantitatively and qualitatively. Rather, it should address the issues of climatic changes, economic and health repercussions on local communities, as well as addressing various social phenomena such as poverty, unemployment, etc. The importance of agricultural extension has increased with the developments and changes that have occurred in recent years as a result of the amazing development based on information and communication technology, which has reduced the world to a small village. (Swanson and Rajalahti, 2010). The advisory services carried out by agricultural extension, especially in developing countries, have faced many challenges in the past period due to economic and social changes, restructuring programs, and agrarian reforms (Zwane, 2012). Studies conducted in many developing countries have confirmed that agricultural extension services have not been highly effective in optimizing farmers' technical skills due to insufficient resources, lack of transportation, poor training, and a top-down approach of management. (Anderson *et al*. 2006; Eicher, 2007; Swanson and Rajalahti, 2010). This led to the Nairobi Declaration deciding that the most important reason for the decline in productivity in Africa is the deterioration of the performance of agricultural extension services (Pye-Smith, 2012).

Criticisms of the government extension systems have been raised in many countries, describing these systems as weak and unresponsive to development, in addition to inefficiency and ineffectiveness, and the inability of governments in developing countries to bear their budgets as a burden. Therefore, the process of reforming or modernizing them became inevitable (Qamar, 2005). In light of the many economic and social variables surrounding rural communities in general and the agricultural production process in particular, which led to the shortfall in the performance of the extension service, it is required to work on modernizing agricultural extension to become more capable of dealing with modern agriculture and more responsive to the farmer's needs. The current agricultural extension system in Egypt faces many problems and shortcomings such as the presence of dual supervision at the governorate, district, and village levels, and the lack of cooperation and coordination between subject specialists and agricultural extension workers in villages, in addition to weak coordination and links between farmers, researchers, and extension workers at the local level (Rivera, et. al., 2001;Kora & Kassem, 2010). The agricultural extension system in Egypt is also characterized by the absence of stable policies for the preparation and rehabilitation of agricultural Extension workers, their modest performance sufficiency, the shortness of extension programs, the lack of diversity of activities, Inadequate human and material capabilities of qualified workers, budgets, headquarters, means of transportation, low salaries, lack of incentives and opportunities for promotion, low participation of farmers in extension activities, poor efficiency of training programs, and the lack of an objective evaluation of extension activities that address their economic, educational, and technical effects, and the low levels of job satisfaction. (El-Shafie, 2009; Abdel-Ghany and Diab, 2013). Hence Qamar (2005: 21) pointed out the need for policy-makers and those concerned with agricultural extension to study first the nature of the existing extension system to determine whether it needs reform or not. Almost all those concerned with agricultural affairs in Egypt unanimously agreed that the agricultural extension system needs reform and development, which was decided by the Sustainable Agricultural Development Strategy 2030 (MALR, 2009). From the above, and in view of the requirements of change in the agricultural sector in light of global changes, the Egyptian agricultural extension is in dire need of modernization and development in line with these variables, and this study aimed to identify the most important problems and obstacles facing extension work in the Arab Republic of Egypt from the extension workers point of view with regard to general policies and organizational structure, or with regard to functional obstacles and the work environment, as well as problems related to financing extension work, or those related to training workers, or coordination between agricultural extension and other organizations of common interest.

The specific objectives of this study were to:

- Examine the socio-economic characteristics of the of the surveyed agricultural Extension workers
- Identify Extension workers' job satisfaction degree.
- Identify the most important constraints facing the extension work from the respondents' point of view.

MATERIALS AND METHODS

This research can be classified within the framework of survey research, and this type of research is useful in providing data on the reality and respondents opinions on a subject or a particular phenomenon, Accordingly, this research relied on the method of the social survey as the most common and most used descriptive research patterns, This study was conducted in Fayoum and Beheira governorates (Figure 01) which are the two governorates targeted by the Agricultural Extension Reform and Modernization Project in the Arab Republic of Egypt, under whose umbrella this study is being funded by the National Research Center 2019-2022. This study is one of the results of this project.

Population and Sampling

A simple random sample was selected from the total agricultural extension workers in Fayoum and Beheira governorates, who were 400 respondents, equation of (Krejcie & Morgan ,1970) to determine the sample which was 196 agricultural extension workers representing 49% of the study population. The number of surveyed extension workers in each governorate was determined according to the relative weight of the number of agricultural extension workers, so that the number of surveyed extension workers in Fayoum Governorate was 83, while it reached 113 respondents in Beheira Governorate, as shown in Table 01.

Data collection Technique:

Data were collected through a personal interview with the respondents during the period from October 2020 to February 2021, a questionnaire designed based on the framework of modernization and development of agricultural extension systems developed by FAO to modernize agricultural extension in the world. (Qamar, 2005). In data analyses, frequencies, percentages, mean and standard deviation were used. Data were analyzed using the IBM SPSS program.

Source: https://www.nationsonline.org

Figure 01: Map of Egypt explained Fayoum and Beheira governorates

Table 01: Distribution of the research sample in the selected villages

Governorate	Number of agricultural Extension workers	The relative weight	Sample size
Fayoum	169	42.2%	83
Beheira	231	57.8%	113
Total	400	100.00	196

Source: Fayoum and Beheira Directorates of Agriculture, Agricultural Extension, unpublished data, 2021

RESULTS AND DISCUSSION

Characteristics profile of the Extension workers

The results (Table 02) showed that the majority of surveyed agricultural Extension workers (62.2%) were 46 years old and over, while 31.6% of them were in the age category of 36-45 years. These results indicated that the extension organization in Egypt suffers from aging and erosion. The number of agricultural extension workers in Egypt decreased from 9,650 in 2007 to 2,860 in 2017, serving more than 6000 villages, which means that the extension system has lost 70% of its employees within 10 years (CAAES, 2018). Also, results showed that nearly two-thirds of the surveyed extension workers (60.2%) had an intermediate qualification and that 37.2% of them had a university qualification, while 2.6% of them have a post-university qualification. These results are consistent with what was stated by (Baloch and Thapa, 2018) in Pakistan that most of the respondents had just a pre-university education. This indicates the need to hire new agents with higher qualifications who are expected to be more able to learn and absorb the new in agriculture, and to play a greater role in supporting the extension apparatus in Egypt. The results showed that 41.3% are specialized in agricultural extension, and that (58.7%) are non-specialists, which is a large percentage that needs to raise their efficiency by holding training courses, and giving priority on new hiring to specialists in agricultural extension which had more ability and greater experience in dealing with farmers.The results showed that about two-thirds of the surveyed extension workers were of rural upbringing, perhaps this is considered one of the strengths, as the people of the countryside are the most knowledgeable of the people about the customs and traditions of the rural people and their problems. The results (Table 02) showed that the vast majority of the respondents had practiced extension work for more than 17 years, and it is possible to rely on this great experience, which is one of the strengths of the Egyptian extension organization in supporting extension work and working to transfer these experiences to new agents.

Training provides the human competencies that any organization needs to achieve its goals. However, many agricultural extension workers in African countries lack the necessary competencies to perform their work with farmers efficiently **(**Belay, 2003**).** Results showed that nearly half of the respondents had attended less than 5 training courses during their service period, which indicates a clear lack of training programs offered to the respondents. Therefore, training courses should be developed in terms of quantity and quality through increasing training courses and improving their content based on the trainees' needs and aspirations as this problem is not specific to Egypt, where international reports reveal a decline in the educational and training level of agricultural extension workers around the world, especially in developing countries. (Swanson and Rajalahti, 2010; Terblanché & Koch, 2012) Results indicated that nearly two-thirds of the surveyed agents supervise an area less than 700 feddan, and that a quarter of them oversee an area of 1,400 feddan or more. It is clear that the scope of supervision seems large; this may be due to the decrease in the number of extension workers annually due to the retirement for the pension, which makes this scope permanent in an increase, as the job burdens of those who left the extension service are distributed to their fellow workers. Therefore, attention must be paid to hiring new agents and working on preparing new cadres to take charge of the extension work.

Table 02: Socio-economic characteristics of respondents (n=196)

Socio-economic variables	F	Percentage	Mean	SD
Age (Years)				
Young (up to 35)	12	1.6		
Middle aged (36-46)	62	6.31	9.47	7.3
Old (above 46)	122	2.62		
Educational level				
Secondary	118	60.2		
University Education	73	37.2		
Post graduate	5	6.2		
Specialization				
Agricultural Extension	81	41.3		
Others	115	58.7		
Upbringing				
Rural	132	67.3		
Urban	64	32.7		
Work experience (Years)				
17>	33	16.8		
17-26	144	73.5	20.7	6.14
26 <	19	9.7		
Training courses				
5 courses>	91	46.4		
5-9	90	45.9	2.23	2.46
9 <	15	7.7		
Supervision size (*feddan*)				
700 *feddan*>	123	62.8		
700-1400 *feddan*	24	12.2	637	113
1400 *feddan* <	49	25.0		

Sources: Field Survey, 2021

Job satisfaction of the surveyed agricultural Extension workers

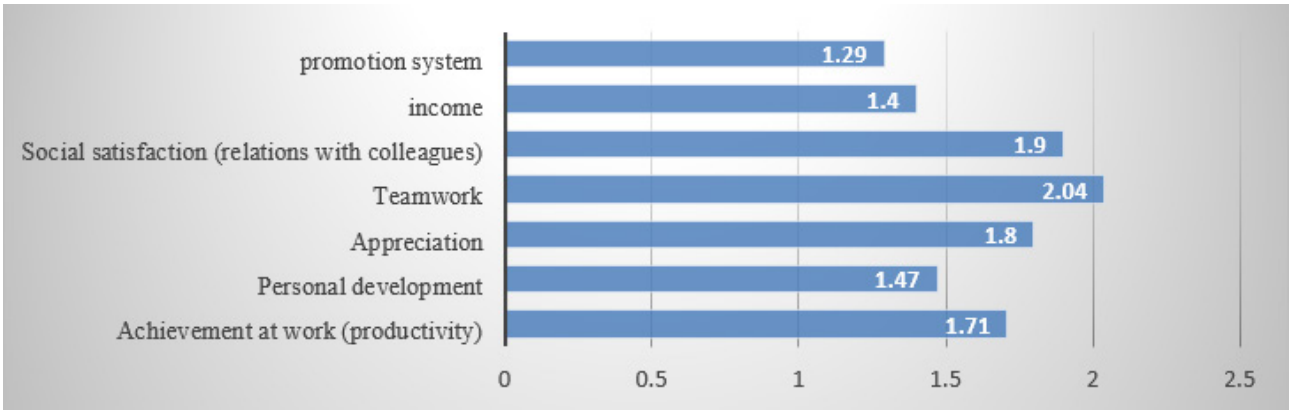
The Egyptian agricultural extension system suffers from the lack of stable programs for preparing and qualifying agricultural extension workers, insufficient budgets, headquarters, and means of transportation, low salaries, and weak career advancement opportunities. Agricultural extension workers are the lowest paid compared to their colleagues in the agricultural education sectors or agricultural scientific research. (El-Shafie, 2009; Riaz, 2010; Abdel-Ghany and Diab, 2013; Debelo, 2020) The previous factors were reflected on the respondents' job satisfaction levels, as the results (Table 03) indicated that more than three-quarters of the extension workers (78.2%) fell into the categories of low and medium job satisfaction, which indicates that psychological, occupational and environmental factors that make agricultural Extension workers satisfied with their work may not be sufficiently available.

Job satisfaction of the respondents was measured through seven dimensions, which are the promotion system, income, social satisfaction, the presence of teamwork, appreciation, self-development, and achievement at work. Figure 02 shows satisfaction with the work environment (Relationships with colleagues) and the availability of teamwork came at the forefront of these elements, followed by satisfaction with relationships with colleagues with weighted averages of 2.04 and 1.9 degrees, respectively, while the respondents' satisfaction about income and opportunities for promotion ranked last with weighted averages of 1.40 and 1.29 degrees, respectively.

Table 03: Distribution of the agricultural extension workers surveyed according to their level of job satisfaction (n=196)

Job satisfaction level	F	%	Mean	SD
Low (less than 12 degrees)	51	26.00		
Medium (12 - < 17 degrees)	103	52.06	13.5	2.6
High (17 degrees or more)	42	21.04		

Source: Field Survey, 2021



Sources: Field Survey, 2021

Figure 02: Ranking the respondents' job satisfaction elements

The surveyed extension workers' opinions regarding the most important problems facing extension work in the Arab Republic of Egypt: problems related to public policies and the organizational structure

The results presented in Figure 03 show that there are many problems related to the public policies and the organizational structure of extension work in Egypt. At the forefront of these problems came the problem of the decreasing number of agricultural extension workers where 81.6% of the respondents stated that agricultural extension workers were currently insufficient to carry out the required extension tasks, which require officials to address this severe erosion in the extension organization, which declined from about 25,000 Extension workers in the nineties of the last century to less than 2,000 Extension workers at present with most of them over fifty years of age and do not undertake any fieldwork. These results were in line with what was confirmed by the 2030 Agricultural Development Strategy (MALR, 2009), as well as with studies of (El-Shafie, 2009; Terblanché & Koch 2012) which confirmed the fact of the significant decline in the number of agricultural extension workers in Egypt.

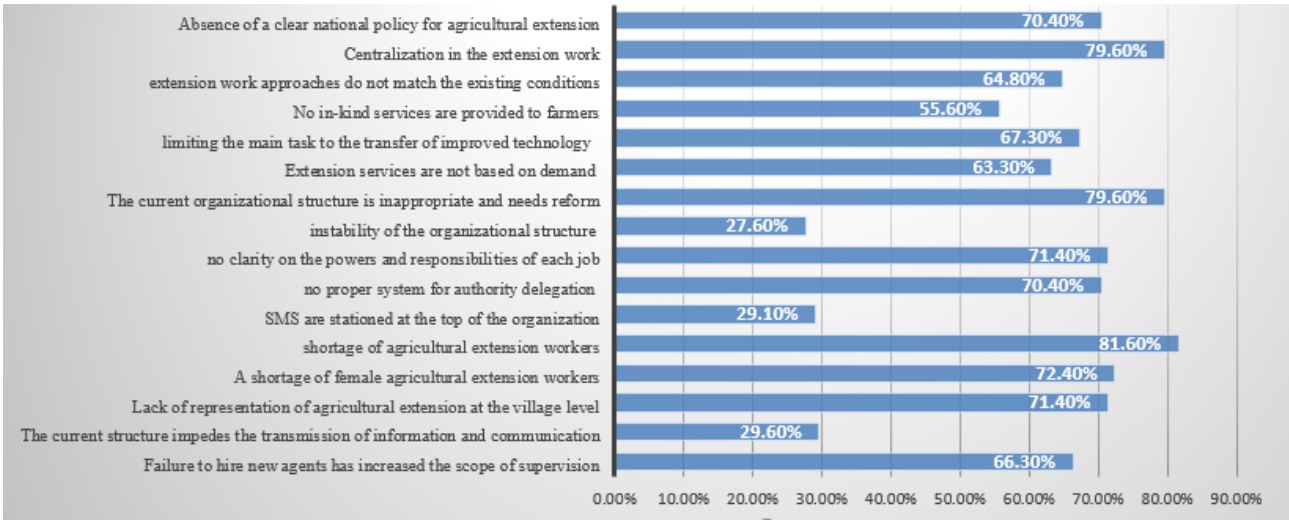
The role of women in the extension organization is very important, and it is expected, as Ragasa *et al*., (2016) mentioned, that its performance will be good. Especially, in closed environments such as the Egyptian rural society which creates many barriers between rural women and men and contrary to what should be. There is a large deficit in females in the extension organization at the local level according to 72.4% of the respondents, which is a reflection of the previous problem, which calls for urgent intervention by hiring new agricultural Extension workers and focusing on holders of higher qualifications, and women in these hiring.

In their quest to improve their agricultural efficiency, many extension organizations are moving towards decentralization, which means transferring a lot of powers and authorities to the lower level (Anderson and Feder, 2004; Habib *et al*. 2010). Centralization in extension work was

one of the important problems, as mentioned by 79.6% of the extension workers, as extension programs are planned and evaluated centrally, and neither the extension workers nor the farmers participate in planning these programs, nor determine the priorities of extension work in their areas. Therefore, organizational reform through structural transformation of agricultural extension agencies is inevitable (Alex *et al*. 2004). Therefore, 79.6% of the respondents indicated that the current organizational structure is not appropriate. And it needs to be amended, as there is no clarity in the powers and responsibilities for each job in the extension organization according to 71.4% of the respondents and there is no appropriate system for delegating authority according to 70.4%of them. Moreover, the results indicated that limiting the task of agricultural extension only to transferring improved technology to farmers and not covering extension activities in areas other than agricultural production such as climate change, family, population, environmental protection, and natural resource management, this approach has met with limited success in sustainable development. These results are consistent with what Abate (2008) mentioned, where the agricultural extension in Ethiopia faces the same problem despite the presence of the largest number of extension workers in Africa (63,000 agents) in the Ethiopian agricultural extension, and therefore, officials should take these issues into consideration when planning any modernization and development related to the extension work system in Egypt.

Problems related to work environment:

Agricultural extension has developed greatly during the past two decades, despite the implementation of many and varied reforms in many countries to change the agricultural extension environment and its outputs (Rivera *et al*. 2001). There are still many obstacles and problems resulting from the conditions of fieldwork, which affect the work environment and the morale of workers (Belay and Degnet, 2004). One of them is the problem of Job responsibilities conflict of agricultural extension workers, which was mentioned by 83.2% of the surveyed extension workers. Although the main role of the agricultural extension service is educational in the first place, the management authorities insist on assigning agricultural extension workers at non-extension work, such as collecting statistics, distributing inputs, and writing reports of farmers' agro violations, etc., according to 85.2% of respondents. This creates a gap between the agricultural extension and the public (Belay *et al*. 2012) (Anderson & Feder, 2004), (Kora, & Kassem, 2010). Similar findings were reported by Belay, (2003) where he emphasized that the agricultural Extension workers' (development agents) participation in activities such as collecting fertilizer credit, significantly affects their relationship with farmers.



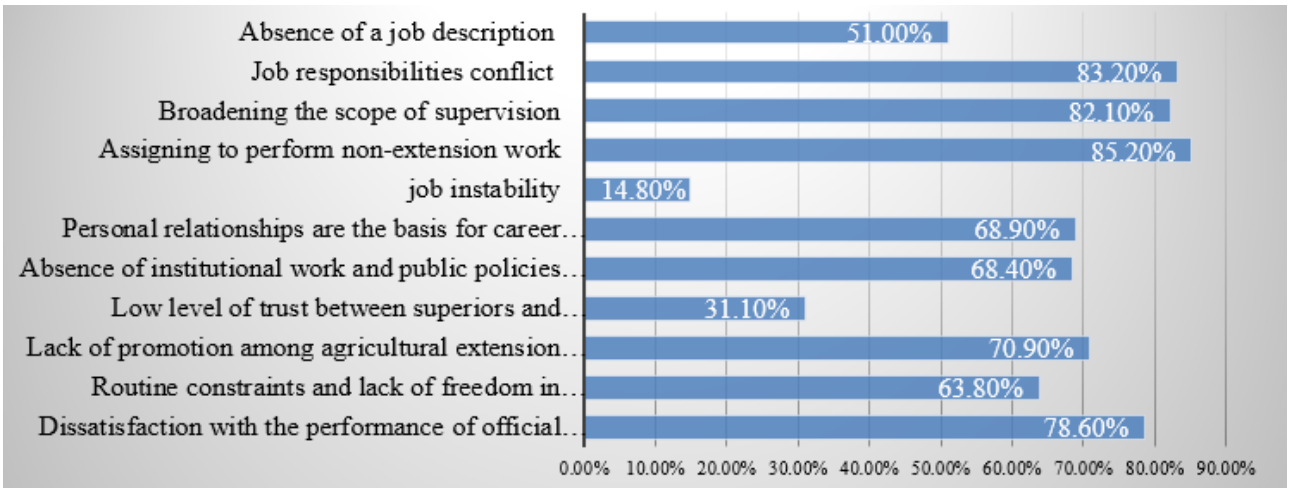
Sources: Field Survey, 2021

Figure 03: Problems related to the general policies and organizational structure

There are other problems regarding the work environment, as shown in Figure 04, including the absence of job descriptions 51%, in which there are no specific roles and clear terms of reference for agricultural Extension workers, the increase in the scope of supervision 82%, the absence of institutional work and the association of the organization's general policies with the responsible persons 68.4%, and the presence of many routine restrictions and other problems, which may be the reason for the dissatisfaction of the majority of the respondents (78.6%) with the performance of the official agricultural extension system (Figure 04). These results are in line with Riaz (2010) who stated that such obstacles led to a decrease in the morale of workers in the extension system in Pakistan.

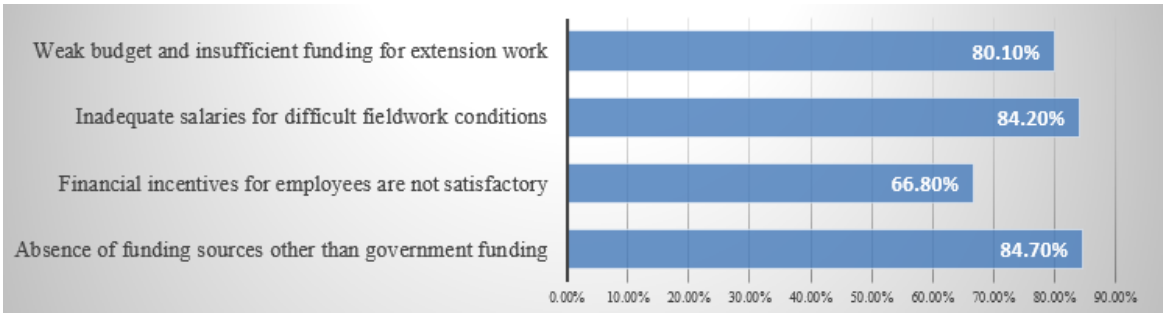
Funding and budgeting problems

Financing the agricultural extension system is at the forefront of the issues that those responsible for extension work seek to address. This problem is more evident in developing countries that suffer from the absence of funding sources for extension work other than government funding and this problem intensified after the cessation of international organizations' support in the past two decades (Timmer, 2005). The existence of this problem was confirmed by 84.7% of the respondents Figure 05. This has led to a weak operational budget, according to 80.1% of the respondents, which directly affects the efficiency and effectiveness of the extension systems as reported by Berhanu *et al*., (2006). Likewise, inadequacy of salaries is a problem that exists in most developing countries, where extension staff does not receive the salaries and operating budget that they deserve (Qamar, 2005; Anderson, 2007). This problem is reported by 84.2% of the respondents. Accordingly, the responsible authorities should work to provide adequate funding for the extension work and seek to provide alternative sources of funding away from government support, which is shrinking day after day.



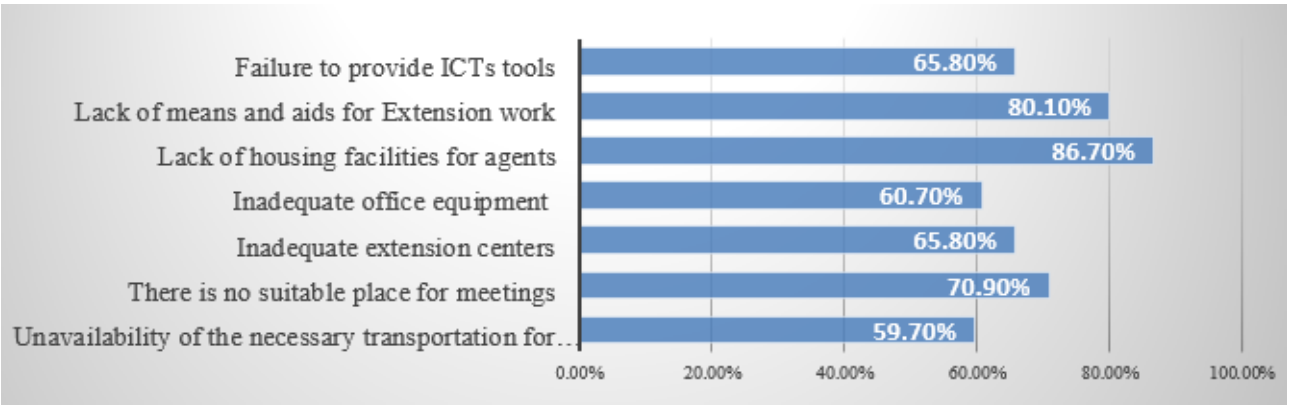
Sources: Field Survey, 2021

Figure 04: Work environment obstacles that respondents face



Sources: Field Survey, 2021

Figure 05: Funding and budget obstacles that respondents face



Sources: Field Survey, 2021

Figure 06: Obstacles related to capabilities and facilities

Problems related to capabilities and facilities

There are many facilities that must be available to perform the extension work. These facilities vary from bui (National Strategy for Ethiopia's Agricultural Extension System, 2014). There was also a lack of office equipment, which was confirmed by 60.7% of them, which was reflected in the weak use of ICT tools in extension work, according to 65.8% of respondents. Figure 06 shows that all of these problems, have certainly bad repercussions on the quality of the extension service. These results are in line with the previous studies conducted by (Qamar, 2005; Anderson *et al*. 2006; Eicher, 2007; Riaz 2010) which emphasized the negative impact of lack of faci ldings, equipment and supplies, means of transportation, and means of communication. The Egyptian extension system suffers from many problems related to the absence of facilities, such as housing facilities according to the vast majority of respondents (86.7%). There is no suitable place for holding extension meetings, according to 70.9% of them. This is due to the insufficiency of extension centers. Whilst 65.8%, whose number in Egypt does not exceed 250 extension centers that do not meet the minimum quality of services provided to farmers, the number of these centers in some African countries such as Ethiopia has reached more than 11,000 FTCs (farmer training centers) lities on the quality of extension service.

Problems related to planning, implementing, and evaluating extension programs and activities

Agricultural extension program is briefly a comprehensive statement of the current situation, the existing problems, the objectives, and the proposed actions that the program seeks to achieve in order to solve these problems. The process of developing extension programs passes through three stages namely, planning, implementation, and evaluation. The results (Figure 07) indicated the existence of problems. The most important one was the lack of agricultural extension programs, as 93.4% of the respondents stated that these programs are very limited and do not cover all problems related to agricultural work. In addition, there also exists absence of extension programs directed to rural women and rural youth according to 89.2% of respondents. This means a marginalization of important sectors of rural society that have significant contributions to agricultural work. Also, the existing programs do not fit the social, economic, and cultural reality of the target audience, according to 85.7% of the respondents. These results are consistent with what was stated by (Qamar, 2005; Riaz, 2010; Baloch and Thapa, 2018) where the planning of these programs is at the central level following a top-down approach and not from the bottom up as it should be. The results confirmed that the Extension workers at the grassroots level do not participate in the planning of these programs, according to 98.5% of the Extension workers. This leads to a lack of commitment and satisfaction according to (Belay *et al*. 2012). If this is the case, then the farmers are also deprived of participating and had no role in planning,

implementing, or evaluating these programs, in contrast, agricultural extension systems in many countries have undergone a transformation to transform participatory models (Düvel, 2005) as the participation of stakeholders in planning extension activities and formulating programs and policies is of paramount importance (Rivera & Qamar, 2003; Ponnusamy *et al*. 2009; Belay *et al*. 2012). Therefore, farmers' participation in planning, implementing, and evaluating extension activities must be taken into consideration by agricultural policymakers to address them in any new organizational setting for agricultural extension.

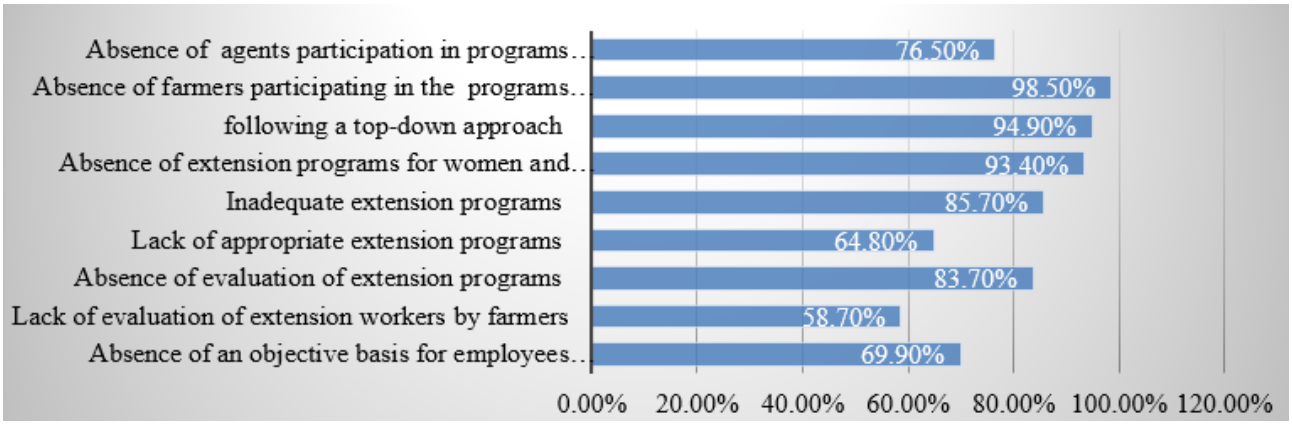
Problems related to training agricultural extension workers

Extension workers are the human capital of the organization that must be developed (Rivera and Kamar, 2003). This is done through training employees, which contributes to improving their performance by addressing deficiencies in some skills and weaknesses. The training enhances and improves the skills that each extension worker needs, and develops their level, which helps to increase the organization achievement. Among the most important problems related to workers' training according to 82.7% of the extension workers, was the problem of not studying the training needs of agricultural extension workers, as these programs are developed from the highest level without taking into account the respondents' need. And the lack of technical information regarding agricultural innovations from research institutions to the surveyed extension workers was also identified according to 59.7% of them. Figure 08 shows that weak academic pre-service programs, and the absence of adequate training opportunities during the service were among the most important of these problems, which make the current extension cadres weak in their competence. These results are similar to the results of previous studies (Swanson, 2008; El-Shafie, 2009; Terblanché & Koch, 2012) that confirmed that agricultural extension in many countries suffers from the absence of trained cadres, and they need extensive training to perform the roles assigned to them. It is definitely known that training problems are closely related to funding. In Egypt, for example the agricultural extension budget declined from 45 million pounds in the nineties to about 200,000 pounds in 2016. According to the Central Administration for Agricultural Extension Services (CAAES, 2018) this sharp decrease in the budget was certainly reflected in all aspects of extension work, including the training of extension workers.

Farmers related problems

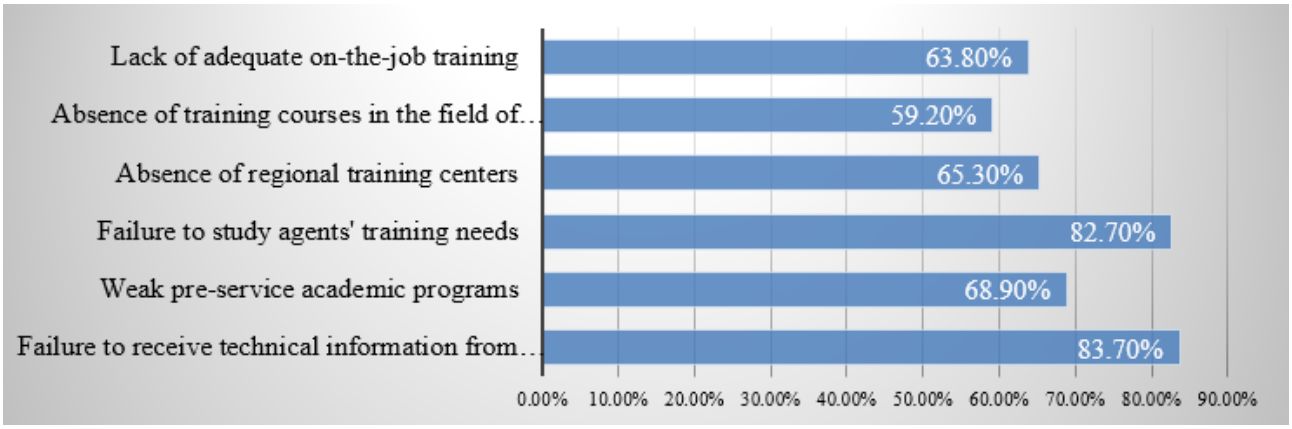
Access to the target audience is the ultimate goal of any extension work, and local leaders have an important role in linking farmers to extension work. The results shown in Figure 09 indicated the weak role of local leaders according to 84.2% of the respondents, lack of strong farmers associations % 83.7 acording to and the severe decline in the role of cooperatives, according to 82.7% of the respondents. Thus, the agricultural extension should play an active role in building social capital by helping farmers organize themselves into groups and associations (Swanson, 2008), by focusing on the use of participatory and needs-based approaches that ensure community participation in extension work (Düvel, 2004).

The lack of interest of the extensionists to attend the agricultural extension activities, the low educational and cultural level of farmers, and the growing negative image of the capabilities and efficiency of the extension workers were among the important problems related to the farmers that must be taken into consideration when planning any extension activities and these results are in agreement with the results of previous studies of (Abdu-Raheem, 2013; Baig, 2013; FAO,2017). which emphasized the need to shift from the current approach to a participatory approach, in which the extension workers are considered a facilitator rather than a teacher where the farmer is considered a partner, not an educator, and extension programs are developed according to the needs of farmers at the local level.



Sources: Field Survey, 2021

Figure 07: Obstacles related to planning, implementing and evaluating extension programs and activities



Sources: Field Survey, 2021

Figure 08: Obstacles related to the agricultural extension workers training

Sources: Field Survey, 2021

Figure 09: Obstacles related to Farmers

Problems related to coordination between agricultural extension and other organizations of common interest

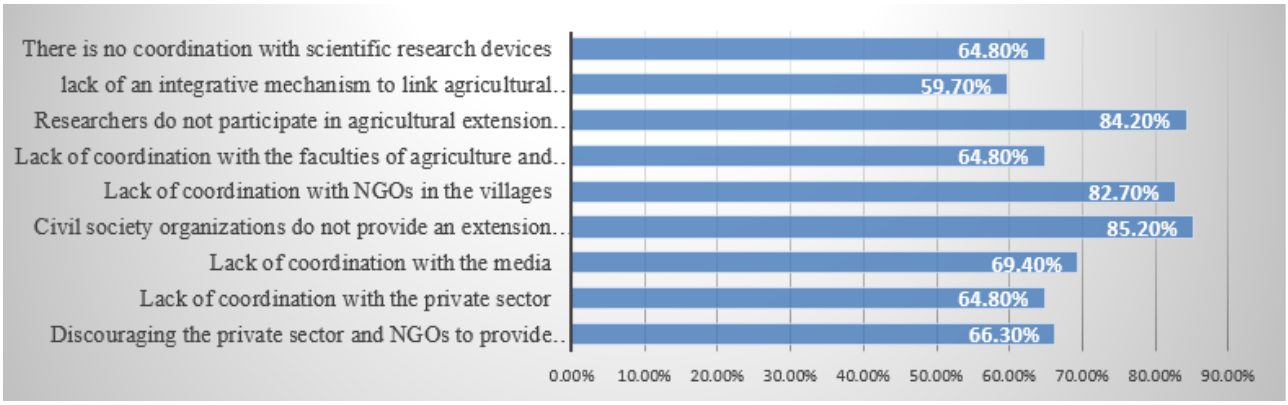
Coordination between ministries and institutions related to the agricultural activity is critical to achieving development goals, despite the Ministry of Agriculture's keenness to achieve this within the framework of the drawn strategies as it has not achieved this coordination in the desired

way. Accordingly, the results indicated lack of coordination between the agricultural extension and scientific research institutions 64.8%, in addition to lack of researchers' participation in agricultural extension activities (84.2%) which may be due to the absence of a clear and integrative mechanism to link agricultural extension with scientific research institutions, as mentioned by 59.7 % of the respondents. This fact was confirmed by previous studies of (Wale and Yalew, 2007) in Ethiopia, (MALR. 2009; Kora & Kassem, 2010) in Egypt (Joshi *et al*. 2015) in India and (Olatunji *et al*. 2015) in China. The respondents also indicated the absence of coordination between the extension system and the colleges of agriculture and veterinary medicine, according to 64.7% of them. Despite the great role of agricultural education institutions and universities in providing extension services in countries that adopt the university extension approach, such as the United States of America, their role is still very limited in many developing countries (Koch & Terblanché, 2013). This coordination was also absent with the print, audio, and visual media (69.4%), and with NGOs in villages (82.7%) that do not participate in providing extension services to farmers (85.2%), and with the private sector (64.8%). Therefore, existing extension services should develop cooperation and partnership programs with a variety of extension service providers in universities, research institutions, NGOs, the private sector, etc. (Qamar, 2005; Davis, 2009). Diversity in advisory services provides a greater opportunity for farmers to benefit from the comparative advantages of each type and reduce required Extension workers in public extension systems (Swanson, 2008). However, the challenge facing agricultural extension systems is to find an appropriate mechanism for coordination between these providers that achieves a balance and avoid efforts duplication (Rivera and Sulaiman, 2009).

El-Shafie, (2009) believes that the current conditions are appropriate to find a new formula for contractual extension in Egypt so that farmers pay the extension services costs in whole or in part through non-governmental organizations and farmer associations. Hence, an important question arises: Can the private sector be considered an alternative to government extension? In fact, private extension is still in its early stages, especially in developing countries, where it represents only 5% of agricultural extension services in the world (Anderson & Feder, 2007).

Abdu-Rahim) 2014) believes that the private sector can provide extension services more efficiently than government extension, and it can be considered an important alternative to public extension. Similar results were confirmed by Riaz (2010) in Pakistan who emphasized that private extension has replaced government extension more effectively, while Rivera and Qamar (2003) pointed out the need to reform government extension systems and to remain in place to enhance food security and rural development issues, and that the private sector represents an addition to the extension service. However, it cannot be considered a substitute.

Results in Figure 10 showed that two-thirds of the surveyed extension workers believe that government policies do not encourage the private sector and non-governmental organizations to provide extension services to farmers. Therefore, the public extension should not view the private sector as a threat, but rather as a potential opportunity for new partnerships (Alex *et al*. 2004), where agricultural partnerships between the public and private sectors combine the operational and economic efficiency of the private sector and the role of the public sector in securing a favorable environment and setting appropriate regulations to ensure social interests.



Sources: Field Survey, 2021

Figure 10: Obstacles related to coordination between agricultural extension and other organizations of common interest

CONCLUSION

The results indicated that the extension organization in Egypt suffers from aging and erosion. Also, the majority of the respondents have a moderate qualification, which indicates the need to open the door to hire new extension workers with higher qualifications. As most of the respondents were not specialists in agricultural extension, priority should be given for hiring agricultural extension specialists. The results indicate that the vast majority of the respondents had have an extensive experience in extension work, and this great experience, which is considered one of the strengths of the Egyptian extension organization, can be relied on, in supporting the extension work and working to bequeath these experiences to the new extension workers. The results indicate that psychological, occupational, and environmental factors that make agricultural Extension workers satisfied with their work may be Not sufficiently available. The results indicated that there were many problems and obstacles facing extension work in Egypt, some of which were related to public policies and organizational structure, work environment, financing, facilities and facilities, training of workers, problems related to beneficiaries, and problems related to coordination between agricultural extension and other organizations. It is important to bring these issues to the table before planning any future modernization of the agricultural extension system in Egypt.

RECOMMENDATIONS

1: Urgent intervention by hiring new agricultural extension agents, focusing on holders of higher qualifications, and not neglecting women in these appointments.

2: Decentralized planning and evaluation of extension programs

3: Participation of extension workers and farmers in planning these programs and prioritizing extension work in their areas

4: Training courses should be developed in terms of quantity and quality through increasing training courses and improving their content based on the trainees' needs.

5: The responsible authorities should provide adequate funding for the extension work and seek to provide alternative sources of funding away from government support.

6: Reform and update the organizational structure of agricultural extension based on the results of the current study and with the participation of all concerned parties.

REFERENCES

Abate, H. (2008). Agricultural extension in Ethiopia: Historical Evolution, Relevant Policies and Challenges. In: Taye Assefa (ed.) Digest of Ethiopia's national policies, strategies and programs. Addis Ababa, Ethiopia. ISBN 13; 978-99944-50-19-0. Avalible at: https://www.cifor.org/knowledge/publication/4435/

Abdel-Ghany, M., & Diab, A. (2013). Reforming agricultural extension in egypt from the viewpoint of central level extension employees. Arab universities journal of agricultural sciences, 21(2), 143-154. doi: 10.21608/ajs.2013.14816

Abdu-Raheem, K. A. (2014). Modelling effective and simultaneous promotion of food security and biodiversity conservation through agricultural extension activities. South African Journal of Agricultural Extension, 42(2), 51-61. Retrieved September 10, 2021, from http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0301-603X2014000200005&lng=en&tlng=en.

Alex, G., Byerlee, D., Collion, M. and Rivera, W. (2004): Extension and rural development, converging views on institutional approaches? Agriculture and Rural Developmen Discussion Paper 4, The World Bank, Washington, D.C. Available at: http://siteresources.worldbank.org/intard/825821111129171182/20431824/discussionpaper4fi nal.pd

Anderson J R, Gershon F and Ganguly S. (2006). The rise and fall of training and visit extension: An Asian mini-drama with an African epilogue. World Bank Policy Research Working Paper 3928. Agriculture and Rural Development Department, World Bank, Available at: https://documents1.worldbank.org/curated/en/190121468140386154/pdf/wps3928.pdf

Anderson, J.R. (2007). Agricultural Advisory Services. Background paper for the World Development Report 2008. Washington, DC: Agriculture and Rural Development Department, World Bank Available at: https://documents1.worldbank.org/curated/en/490981468338348743/pdf/413540Anderson1AdvisoryServices01PUBLIC1.pdf

Anderson, J. R., & Feder, G. (2004). Agricultural extension: good intentions and hard realities. The World Bank Research Observer, 19(1), 41–60. https://doi.org/10.1093/wbro/lkh013

Anderson, J. & Feder, G. (2007). Agricultural extension. In Evenson, R. & P. Pingali (Eds.) Handbook of agricultural economics, 3 (2343–2378). Available at: https://econpapers.repec.org/bookchap/eeehagchp/5-44.htm

Baig, M.B.; Aldosari, F. (2013). Agricultural Extension in Asia: Constraints and Options for Improvement. J. Anim. Plant Sci., 23, 619–632 Available at: http://www.thejaps.org.pk/docs/v-23-2/43.pdf

Baloch, M.A., Thapa, G.B., (2018). The effect of agricultural extension services: date farmers' case in Balochistan, Pakistan. J. Saudi Soc. Agric. Sci. 17 (3), 282–289. https://doi.org/10.1016/j.jssas.2016.05.007

Belay K., (2003). Agricultural Extension in Ethiopia: The Case of Participatory Demonstration and Training Extension System. Journal of social Development in Africa, 18(1): 49-83 Available at: https://www.ajol.info/index.php/jsda/article/view/23819

Belay K., and Degnet, A. (2004), Challenges Facing Agricultural Extension Agents: A Case Study from South Western Ethiopia, African Development Review, 16 (1): 139-168 https://doi.org/10.1111/j.1467-8268.2004.00087.x

Belay K, Ranjan S, Dawit A, Abera D, and Jemal Y. (2012). Work motivation and job performance of development agents in Ethiopia. Rural Capacity Building Project Ministry of Agriculture Addis Ababa, Ethiopia. DOI:10.13140/RG.2.1.3576.7766

Berhanu G., Hoekstra D., and Azage T., (2006). Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 1. ILRI (International Livestock Research Institute), Nairobi, Kenya. 36 pp

Available at: https://cgspace.cgiar.org/handle/10568/564

CAAES. (2018). Extension personnel in Egypt. Unpublished statistics. Central Administration for Agricultural Extension and Environment. The Technical office.

CAPMAS. (2018). Central Agency for public mobilization and statistics. Retrieved from https://www.capmas.gov.eg/HomePage.aspx

Davis KE (2009). Agriculture and Climate Change: An Agenda for Negotiation in Copenhagen; the Important Role of Extension Systems. International Food Policy Research Institute. Washington, DC Available at: http://www.gbv.de/dms/zbw/622382101.pdf

Debelo, W.B., 2020. Review on Roles and Challenges of Agricultural Extension System on Growth of Agricultural Production in Ethiopia. Journal of Plant Sciences. Vol. 8, No. 6, pp. 189-200. doi: 10.11648/j.jps.20200806.11

Düvel, G.H., (2004). Developing an appropriate extension approach for South Africa: Process and outcome. S. Afr. J. Agric. Ext., 33(1):1-10. Available at

https://journals.co.za/doi/abs/10.10520/EJC18532

Düvel, G.H.,(2005). Principles, realities and challenges regarding institutional linkages for participatory extension and rural development in South Africa. S. Afri. J. Agric. Ext., 34(2):188-200. Available at: https://www.ajol.info/index.php/sajae/article/view/3669/11643

Eicher, C.K., (2007). Agricultural Extension in Africa and Asia; Department of Agricultrural Economics, Michigan State University: East Lansing, MI, USA. Available at: https://core.ac.uk/reader/7021060

El-Shafie, E. (2009). Improving agricultural extension in Egypt, a need for new institutional arrangements. 19th European Seminar on Extension Education, Theory and practice of advisory work in a time of turbulences, 15 - 19 September, Assisi (Perugia), Italy

FAO. (2017). Information and Communication Technology (ICT) in Agriculture: A Report to the G20 Agricultural Deputies; Food and Agriculture Organisation: Rome, Italy, **Available** at: http://www.fao.org/3/a-i7961e.pdf

Habib, M., Mohammed, A., (2010). The Ethiopian federal system: the formative stage. Friedrich-Ebert-Stiftung, Addis Ababa, Ethiopia. Available at: http://library.fes.de/pdf-files/bueros/aethiopien/07945.pdf

Joshi, P. K., Kumar, P. & PARAPPURATHU, S. (2015). Public Investment in Agricultural Research and Extension in India. Eur J Exp Res, (27) 438–451. Available at: https://link.springer.com/article/10.1057/ejdr.2015.36

Koch, B. H. & Tereblancé, S. E. (2013). An overview of agricultural extension in South Africa. S. Afr. J Agric. Ext, 41(1), 03-13. Available at: http://hdl.handle.net/2263/37265

Kora, G. & Kassem, M. (2010). The Application of Information and Communication Technologies in Agricultural and Rural Development in Egypt, FAO, Rome. Available at: http://www.fao.org/3/i1930e/i1930e00.pdf

Krejcie & Morgan (1970) "Determining Sample Size for Research Activities" (Educational and Psychological Measurement, pp. 607-610).

https://doi.org/10.1177/001316447003000308

Kumara, B., & Geetha, M. (2016). Extension Services in Agriculture Sector. International Journal of Research and Scientific Innovation (IJRSI), 3(8), 166-170. Available at: https://www.rsisinternational.org/IJRSI/Issue30/166-170.pdf

MALR. (2009). A strategy for sustainable agricultural development up to 2030. Ministry of Agriculture and Land Reclamation, Agricultural Research and Development Council. Available at: http://www.agr-egypt.gov.eg

National Strategy for Ethiopia's Agricultural Extension System, Vision, Systemic Bottlenecks and Priority Interventions, (2014). Federal Democratic Republic of Ethiopia Ministry of Agriculture, December Available at: http://faolex.fao.org/docs/pdf/eth190334.pdf

Olatunji, s. O., Nwakor, f. N. & Asumugha, g. N. 2015. Assessment of Transfer of Cocoyam Technologies in Anambra State, Nigeria. JAS, 10 (3), 168–176. Available at: https://jas.sljol.info/articles/abstract/10.4038/jas.v10i3.8070/

Ponnusamy K, Gupta J and Nagarajan R. (2009). Indigenous Technical Knowledge (ITK) in dairy enterprise in coastal Tamil Nadu. Indian Journal of Traditional Knowledge 8 (2): 206-211. Available at: http://nopr.niscair.res.in/handle/123456789/3949

Pye-Smith, C. (2012). Agricultural Extension – A time for Change – linking knowledge to policy and action for food and livelihoods. Technical Centre for Agricultural and Rural Cooperation, Wageningen, The Netherlands. Available at: https://publications.cta.int/media/publications/downloads/1689_PDF.pdf

Qamar, M. K. (2005). Modernizing National Agricultural Extension systems: A practical guide for policy-makers of developing countries. FAO, Rome, Italy Available at: http://www.fao.org/uploads/media/modernizing%20national.pdf

Rivera, W., Qamar, K. and Van Crowder, L. (2001): Agricultural and rural extension worldwide: options for institutional reform in the developing countries, FAO, Rome. Available at: http://www.fao.org/3/y2709e/y2709e.pdf

Rivera, W. M. & Qamar, M. K. (2003). A new extension vision for food security – Challenges to face. FAO, Sustainable Development Department, Rome, Italy. Available at: http://www.fao.org/3/Y5061E/Y5061E00.htm

Rivera, W. M., & Qamar, M. K. (2003). Agricultural Extension, Rural Development and the Food Security Challenge. Food and Agriculture Organization of the United Nations, Rome. Available at: http://www.fao.org/3/Y5061E/Y5061E00.htm

Rivera, W. M., Sulaiman, V. R. (2009). Extension: object of reform, engine for innovation. Outlook on Agriculture. https://doi.org/10.5367/000000009789396810

Ragasa C, Ulimwengu J, Randriamamonjy J, and Badibanga T. (2016). Factors affecting performance of agricultural extension: Evidence from Democratic Republic of Congo, The Journal of Agricultural Education and Extension, 22:2 113–143. Available at: http://www.ifpri.org/publication/assessment-capacity-incentives-and-performance-agricultural-extension-agents-western

Riaz, M. (2010). The role of the private sector in agricultural extension in Pakistan. Rural Development News 1/2010:15-22. Available at: https://www.aesanetwork.org/the-role-of-the-private-sector-in-agricultural-extension-in-pakistan-2/

Swanson, B. E. (2008). Global Review of Good Agricultural Extension and Advisory Services. FAO, Research and Extension Division, Rome, Italy. Available at: http://www.fao.org/3/i0261e/i0261e.pdf

Swanson B.E., Riikka Rajalahti (2010) Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems, Agriculture and Rural Development Discussion Paper No. 45. The World Bank 1818 H Street, NW Washington, DC 20433 Available at:

https://openknowledge.worldbank.org/handle/10986/23993

Terblanché, S. E. & Koch, B. H. (2012). The feasibility of establishing a professional South African extension and advisory body. Report for the Department of Agriculture, Forestry and Fisheries, Pretoria, South Africa. Available at: https://sasae.co.za/wp-content/uploads/2020/10/1-Presentation-SE-Terblanche.pdf

Timmer, C.P., (2005). Agriculture and Pro-Poor Growth an Asian Perspective, Center for Global Development, Working Paper Number 62, Washington D.C. Available at: https://www.eldis.org/document/A19810

Wale, E. and Yalew, A. (2007). Farmers' Variety Attribute Preferences: Implication for Breeding Priority Settings and Agricultural Extension Policy in Ethiopia. African Development Bank, 379-396 Available at: https://doi.org/10.1111/j.1467-8268.2007.00167.x

World Bank. (2007). World Development Report 2008: Agriculture for development. WashingtonDC: World Bank Available at: https://openknowledge.worldbank.org/handle/10986/5990

Zwane, E. M., (2012). Does Extension Have a Role to Play in Rural Development? South African Journal Agricultural Extension.Vol. 40, 24 16 – ISSN 0301- 603X Available at: https://journals.co.za/doi/abs/10.10520/EJC129906