

## DEVELOPMENT EXTENSION SERVICE TO MEETING THE REQUIREMENTS OF BUFFALO BREEDERS IN IRAQ

H. K. Al-Taiy  
Prof.

A. T. H. Al-Salhi  
Lecturer

A. L. J. Al-mashadani  
Lecturer

Dept. of Agri. Exten. and Techn.Trans. , Coll. of Agric. Engin. Sci, University of Baghdad.  
hussainkhadair@yahoo.com

### ABSTRACT

The aim of this research is to development the effectiveness of extension service to meeting the requirements of buffalo breeders in Iraq. The research was concluded in four fields: the first field: Development and adopting an appropriate orientation. It included four axes: Diversifying sources of extension services, comprehensiveness, decentralization, modernization of the work method. Second Field: Organizational Development. It included two axes: strengthening specialized organization (formation of specialized guidance units), capacity development. Third Field: Service Feasibility Development. It includes five axes: service based on the requirements of breeders and the characteristics of their projects, the quality of the content of the service, the use of modern means of communication, appropriate allocations, follow-up, evaluation, and continuous improvement. Four Field: Provide an appropriate external environment. It includes three axes: an enabling environment. The Implementation of a national program for developing buffalo in Iraq.

Keywords: axes, diversiting, service feasibility.

الطائي و آخرون

مجلة العلوم الزراعية العراقية -2020: 51(1):432-442

تطوير الخدمة الارشادية لتلبية حاجات مربي الجاموس في العراق

علي لطيف جاسم المشهداني  
مدرس

احمد ثويني هدم الصالحي  
مدرس

حسين خضير الطائي  
استاذ

قسم الارشاد الزراعي ونقل التقنيات /كلية علوم الهندسة الزراعية/ جامعة بغداد

المستخلص

هدف البحث الى تقديم تصور لتطوير فاعلية الخدمة الارشادية في تلبية حاجات مربي الجاموس في العراق الذي اشتمل على اربعة مجالات: المجال الاول/بلورة وتبني توجه ملائم الذي اشتمل على اربعة محاور هي: تنوع مصادر تقديم الخدمة الارشادية، الشمولية، اللامركزية، تحديث منهج العمل. المجال الثاني/ تطوير التنظيم. اشتمل على محورين هما: تعزيز التنظيم التخصصي (تشكيل وحدات ارشاد تخصصية)، تطورات القدرات. المجال الثالث/ تطوير جدوى الخدمة. اشتمل على خمسة محاور: الخدمة المؤسسة على حاجات المربين وخصائص مشاريعهم، جودة محتوى الخدمة، استخدام وسائل الاتصال الحديثة، تخصيصات ملائمة، المتابعة والتقويم والتحسين المستمر. المجال الرابع/ توفير بيئة خارجية ملائمة. تكون من ثلاثة محاور: بيئة تمكينة ملائمة، بنية تحتية ملائمة، تنفيذ برنامج وطني لتنمية الجاموس في العراق.

الكلمات المفتاحية: تنوع المصادر، الشمولية اللامركزية، تطوير التنظيم.

## INTRODUCTION

Protecting and developing national agricultural resources, including buffalo, is considered one of the Iraqi agriculture challenges to achieve sustainable food security. Developing the contribution of agriculture in the Gross Domestic Product (GDP), in building a diversified national economy as well as improving the incomes, livelihoods and lives of breeders, which are key axes of the Ministry of Agriculture's strategic plan for the years 2015-2025 (22). An effective response to the agriculture challenges is considered a national task requiring a departure from traditional work; it is not an appropriate option (18,24). and to achieve a qualitative leap in meeting the requirements of farmers in all areas of their plant and animal activity and all their groups, including buffalo breeders through the development of the performance and effectiveness of systems and institutions of development and agricultural services, and provide appropriate support to them, as called for by the FAO (15). where indicated that if the family farmers give us the attention and support they deserve and need, we can all meet the agriculture challenges. Agricultural extension is considered a key element in achieving food security and sustainable agricultural development, and an important component of the agricultural innovation system network (1, 31). It leads vital roles in the service of farmers in all areas of their agricultural and animal activity and service of their organizations by meeting their knowledge, information, skills, and technical needs to properly manage their agricultural activities and achieve high value and sustainable outputs, where It facilitates the access of farmers and their organizations to the sources of knowledge, information and technology, facilitates their interaction with scientific research institutions, training and agricultural supplying, and helps them to develop their technical, organizational and managerial skills and practices, thereby improving the management of their agricultural activities (31,11). Qamar (2005) summarized the importance of agricultural extension with a brief statement "Countries such as the United States of America, Canada, Australia, and Denmark have very advanced

agriculture due to they have strong guidance services,". Sethi & Renu, (2011) stated that a strong guidance system is key to the required change to meet the current challenges in agriculture. Therefore, the presence of effective agricultural guidance is considered a requirement and a prerequisite for the developing agriculture in Iraq. Although the history of extension work in Iraq extends to more than 60 years, it has provided important services to farmers throughout its history, the performance and effectiveness of this service is considered below the level required to effectively address the challenges of agriculture in the country(6) and in meeting the requirements of rural (5) which is a major productive activity for thousands of rural families and their source of income; Which had an important impact on their knowledge, skills and technology in the management of their activities and in productivity and economic returns. The weak productivity described in this productive activity in the country is an economic loss for breeders, family, and society. Therefore, the development of the effectiveness of the extension service provided to the rural people working in the breeding of buffaloes in Iraq is considered a requirement and a prerequisite for the development of this productive activity. Among the requirements for this is the existence of a Visualization entrance to the development process. Therefore, the study aims to provide a Visualization to develop the effectiveness of extension service provided to rural people worked in the activity of buffalo breeding. The study was aimed to provide a visualization to develop the effectiveness of extension service. to meeting the requirements of buffalo breeders in Iraq

## MATERIALS AND METHODS

This research comes part of developmental research aimed primarily at drawing on the results which have been developed by Survey research to develop activities and practices at the field level (4); where the Visualization development for the Effectiveness of extension services provided to workers in light of literature and related scientific studies and lessons learned from international experiences in developing the extension service included in these studies as well as the researcher's

expertise in the field of specialization which extends over several decades. This research trend is shown an increase in the field of agricultural extension. The theoretical basis in the preparation of visualization.

**First:** The extension service is a system. According to the systems theory, the system is an entity consisting of interrelated interacting elements - inputs, processes, outputs - that share the influence with the environment (3). The level of characteristics (quality) of the outputs of this service and its effectiveness in meeting the requirements of the target beneficiaries are the outcome of the interaction of the characteristics of their inputs, the characteristics of their operations, their activities(26), projects and programs implemented for the Targeted categories and the characteristics of the environmental factors within which they operate.

**Second:** The developing of the effectiveness of the extension service is a systematic and Continuous process, which is managed by decision makers and policy makers in the extension system. Its responsibility is shared by the local and targeted organizations, aiming to enable this service to effectively respond to the requirements of all rural categories (men, women, and youth). The workers in agricultural activity in the plant and animal fields (Including buffalo breeding activity) knowledge, information, skills, practices, and technologies necessary to perform their roles correctly and effectively, to achieve the effective management for this activity, sustainability, increase its productivity, and economic returns while preserving and maintaining natural resources.

**Third:** Since the 1980s, global agricultural extension has witnessed a large and growing movement to reform national agricultural extension systems in order to improve their performance and improve their effectiveness (6). Among the results of international expertise in this regard are the following:

1- The variety and diversity of approaches (or strategies) applied by countries in developing the performance and effectiveness of their

extension systems, until they became a field of scientific classification and study (6).

Rivera and Qamar, (2003) classified them into five categories:

- a- Change the political structure and focus on delegating power to local levels
- b- Change towards partial privatization
- c- Peasants pay directly to their extension service providers
- d- Total privatization by making the extension service commercial or transfer it to the private sector altogether
- e- Applying several strategies in reforming the extension system (authorization, partial privatization, etc.).

International Livestock Research Institute (2008, 69-70) reported five approaches that focus on making the guidance more effective, efficient and sustainable, including:

- a- Empowering farmers
- b- Decentralization
- c- Private Sector Partnership
- d- Inter-rural linkages

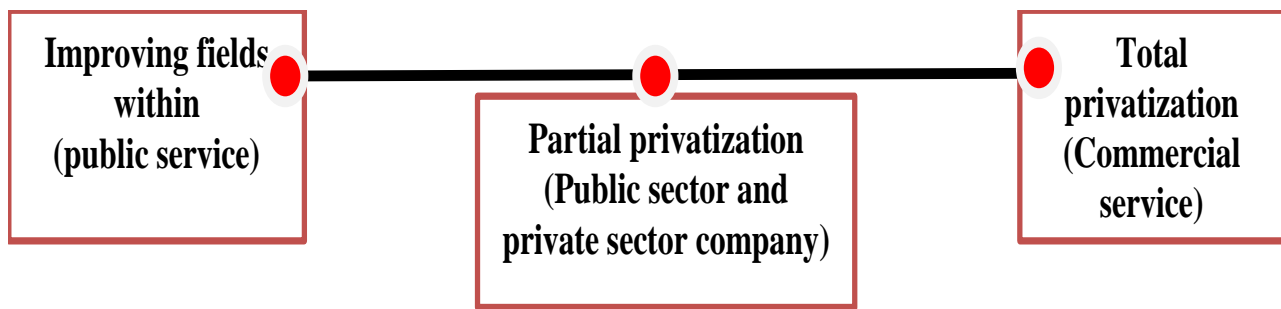
In a World Bank publication, the WCF entries are classified into three entry categories, each with a number of axes:

The axis to the reform of the administrative structure falls under the axis of decentralization, promoting pluralism, privatization.

- a- Capacity and management
- b- Approach axis and Coaching Methods (31).

In addition to, the guidance work currently witnessing and on a global basis, with the encouragement and support from the Food and Agriculture Organization (FAO), a broad and growing approach towards Inclusiveness & Pluralistic Extension Services Systems as one of the alternatives and options to improve the performance and effectiveness of the extension service (16).

2- The development of the extension service is distributed over a wide range of elements and trends, ranging from development in inputs or processes or both, with continuity of service within the public sector (government), public or private sector partnership, or privatization as a commercial service as shown in Figure (1).



**Figure 1. Distribution of entrances directions improving the performance and effectiveness of agricultural extension services worldwide**

3- There is no specific approach or strategy that is suitable for the development of the performance and effectiveness of the extension service in all regions, times and conditions, even if the application results in positive results in one or more countries. And that the choice of the entrance or entrances to development should be appropriate and adapted to the local situation (31). The approaches or strategies applied by the country in developing the performance and effectiveness of the extension service can be Multiple and vary.

**Fourth:** Among the characteristics of the extension service and the buffalo breeding activity in Iraq are the following:

1- The extension service is responsible for one governmental organization (the Department of Extension and Agricultural Training, Ministry of Agriculture) and the absence of the private sector or non-governmental organizations in the provision of extension services, especially in the field of buffalo breeding. This service faces a variety of problems in its basic elements and activities, This influenced on the usefulness of this service and its effectiveness for buffalo breeders

2- The activity of buffalo breeding is a large-scale, specialized agricultural activity in which all categories of rural families (men, women, youth) work. Thus, the term buffalo breeder is not limited to the owner of the herd or the head of the family or a specific category but includes all categories of workers in this activity at the family level. buffalo breeders face a variety of problems in the management of their activities and spread in them illiteracy,

They all need effective guidance to meet the needs of developing their business.

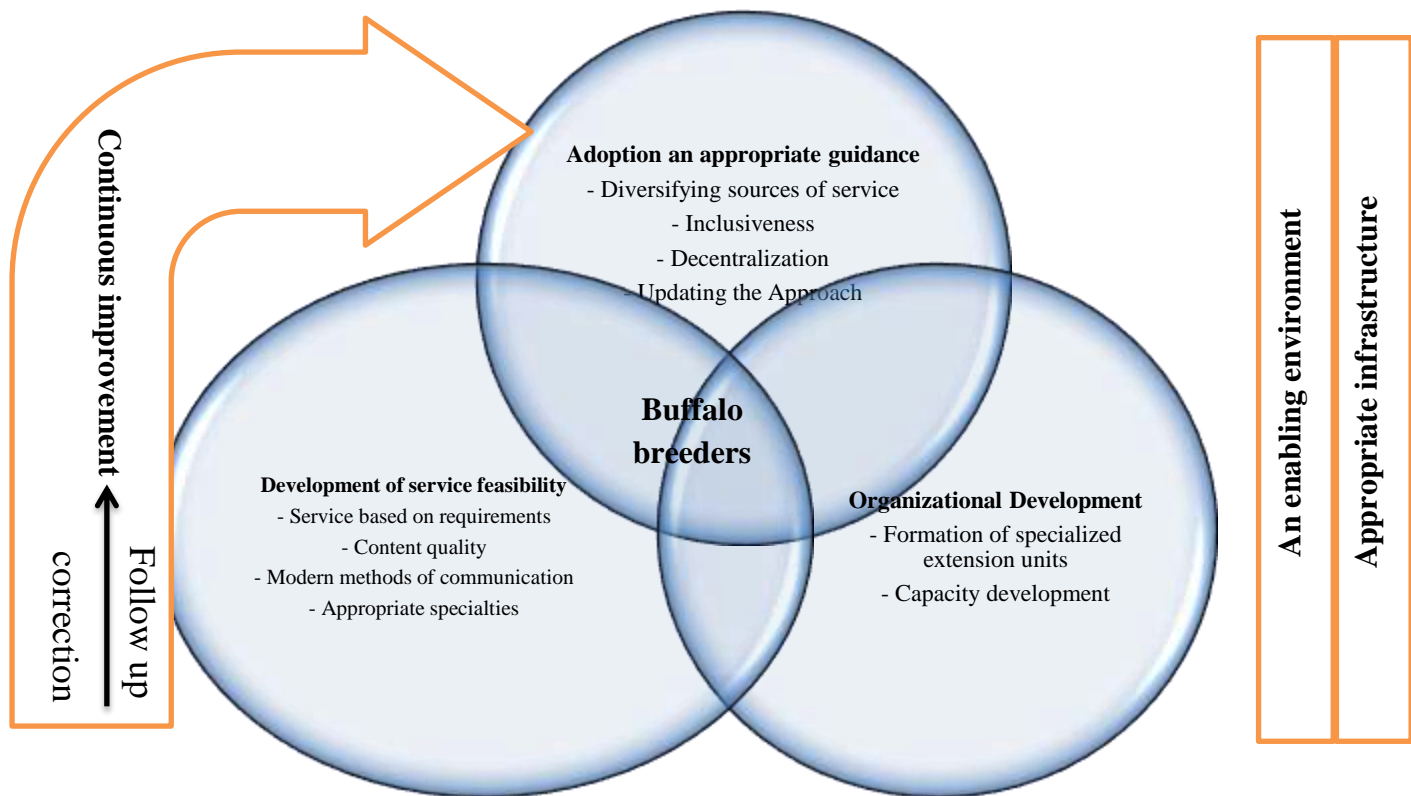
First-fourth, The provision of an effective guidance service to meet the requirements of buffalo breeders necessitates the development of the basic elements of the internal environment of this service taking into account the recent trends in the development of this service at the international level and the provision of a suitable external environment. It identified four interrelated fields for improving the effectiveness of this service:

**The first field:** Adopt an appropriate orientation. It included four entries: Diversification of sources of extension service, Inclusiveness, Decentralization, Modernization the work methodology.

**The second field:** organizational development - includes two axes: strengthening specialized organization (formation of specialized guidance units), capacity development.

**Third Field:** Service Feasibility Development. It includes five entries: service based on the requirements of breeders and the characteristics of their projects, the quality of the service content, the use of modern means of communication, Appropriate assignments, follow-up, evaluation, and continuous improvement.

**The Four field:** Provide an appropriate external environment. It is made up of three entrances: an enabling environment. Infrastructure, implementation of a national buffalo development program as shown in Figure (2). The sequence of these fields in perception does not constitute a chronological order in development procedures.



**Figure 2. fields of development of effective extension service for workers in buffalo breeding**

## RESULT AND DISCUSSION

### The proposed Visualization fields to develop the effectiveness of extension service

**The first field:** Developing and adopt an appropriate orientation. It includes the following suggested items:

**First:** diversifying the sources of extension service

The diversification of the sources of extension service is the participation of more than one Governmental agricultural organization (and non-governmental) by providing extension service to buffalo breeders, especially Organizations whose objectives or activities relating to the protection it and development. In order to implement this approach, it is proposed that the veterinary and animal health departments participate in the Ministry of Agriculture's formations to provide extension service to breeders alongside the Agricultural Extension Service. The objectives and tasks of the two organizations are focused on protecting and developing livestock in the country. The importance of this trend in overcoming the problems of extension service currently, especially in the scope of extension coverage and specialized service and experience of staff and financial specialties

available to one organization specialized in extension service, and to provide a specialized guidance service and more useful for breeders. Pluralistic is considered an increasing trend in the field of global extension work, supported and encouraged by FAO, which means that the extension service is provided to rural people from various actors: government, private sector, NGOs, community organizations, diversified sources of funding, Would bypass the funding, staff and experience constraints resulting from the existence of one government institution responsible for providing this service, and make the extension service more demand-driven (17). The variety and diversification of the sources of extension service for buffalo breeders (and the rest of the animal breeding activities) means the formation of a network of extension services consisting of the Department of Extension and Agricultural Training and the Veterinary and Livestock Departments. The interaction, coordination and collective action between the actors and the target audience is achieved. It aims to achieve the exchange and flow of data and information between these parties and achieve learning for all, which is the key to achieving effective guidance.

**Second: Inclusive service**

The extension service should include all categories of rural people involved in the buffalo breeding activity (men, women, youth) and focus on resource-poor or limited access to guidance, especially women and youth, and respond to their requirements knowledge, information, skills, and technology, and help them to developing their organizational, technical and administrative skills and practices to improve the management and maintenance of their agricultural activities and increase their productivity and economic returns while preserving the environment. where the Inclusiveness aims to overcome the problems of poor access of women and youth and those with limited resources to extension services (or absence from them), who are sometimes described as marginalized despite the fact that they are the majority in this activity and in the general agricultural activity in the country, they are the most needy people to this service, and to facilitate the access of all rural categories at the level of the family working in this activity and in all regions to extension services as the most important axes of this agricultural activity, Their knowledge, skills, practices, and technologies that they use have a significant impact on the management of this activity and its outputs. FAO has summarized the characteristics of the Inclusive extension service as: Responsive to resource-poor peasants, especially women and youth, tailored to the needs and requirements of farmers, it is characterized by continuous dialogue and learning between farmers and service providers, complementary to other service providers (17).

**Third: decentralization of extension service**

Decentralization in indicative work refers to the transfer of extension authority to the lower levels (27) by authorizing extension organizations in the governorates to plan rural extension programs and their agricultural activities in their areas of operation, with a view to making the extension service more appropriate, flexible and adaptive to the requirements of the target population (20). Decentralization is considered one of the most important approaches or strategies for reforming agricultural extension systems, improving their performance and improving

their effectiveness while continuing it as a governmental system within the Ministry of Agriculture. It is one of the proposed approaches to reforming the agricultural extension system in Iraq (6). Burton and Rajalahti, (2010, 53) considered that the decentralization of program planning and accountability to local levels among the challenges facing government agricultural extension systems to date.

**Fourth: Modernization of the work method**

The modernization of the workshop curriculum is a shift from the traditional approach applied in the extension work in the country from its beginnings until now to one or more of the modern methods that are described as more effective. The modernization of the work approach means the transformation from the traditional approach applied in the extension work in the country from its beginnings until now to one or more modern methods that are described as more effective(25); Since the 1970s there has been an increasing trend towards leaving the traditional approach because of the criticisms of its impact and effectiveness, and the shift to more modern, more effective approaches, which vary widely in scope and application(21). Although there is no specific approach to apply in all regions and times, if it is proven to be successful in a specific region or regions, the participatory and interactive approaches to learning are increasingly emphasized. Therefore, it is proposed to move to the field school (FFS) as an alternative to the traditional curriculum in Iraq. This is because of the great advantages that this approach achieves for farmers and for the extension work, where it is:

- a- It is a participatory approach in which farmers learn from each other and by facilitating from Guides and specialists
- b- It is based on an innovative approach characterized by participation and learning of discovery which proved effective. The teaching and learning in the field and the experience and practice, and the farmers experimenting with practices, recommendations and technologies in their fields and collect data and presentation of results and discuss with colleagues, thus developing their abilities and be able to teach

the people of their regions, developing the role of the agricultural guide to become facilitator and assistant rather than traditional teacher, develop the role of experts and specialists to become technical support rather than lecturing (12).

- c- Achieves the formation of farmers groups.
- d- The ability to applying it to all Targeted categories and in diverse areas of management, prevention, marketing, etc.
- e- FAO encourages the deployment of farmers' field schools(14).
- f- It is consistent with and achieves the strategic plan of the Ministry of Agriculture for the years 2015-2025 and is working on the deployment of field schools with an annual curriculum.
- g- It has been widely used in more than 87 countries, including many Arab countries, including Egypt, Egypt, Africa, Latin America, Europe, and America. The areas of its use varied greatly because of its characteristics and its important and rapid results. It is currently being implemented in more than 87 countries, including many Arab countries, including Egypt, Morocco, Algeria, Sudan and Lebanon (8).

**The second field: development of extension service organization. It includes the following items:**

**First: enhancing the specialized organization**

The enhancing of the specialized organization focuses on the formation of specialized extension units in the field of buffalo breeding in the regions where this activity is located, in order to provide extension service to meet the requirements of buffalo breeders. These units may be within the agricultural departments belonging to the agricultural directorates in the province or even within the veterinary clinics. This is in line with the global trend towards specialized guidance, which is considered the most effective in achieving a more useful guidance service, and in line with the directions and program of the Ministry of Agriculture, Higher Diploma in Agricultural Extension Specialist, Which was conducted in cooperation with the College of Agriculture, University of Baghdad for the years 2012-2015, in which more than 130 agricultural engineers participated in the various

specialties of plant and animal, where distributed on the directorates of agriculture in the provinces and agricultural departments. In addition, the formation of specialized extension units in the field of buffalo breeding enhances the specialized guidance in the organizational structure of the Agricultural Extension Service, which includes sections, departments, and specialized extension units in the fields of plant and animal, in addition to a specialized section for the guidance of rural women.

**Second: Capacity development**

Hilderband describes the ability as the means or ability to accomplish a task or achieve an objective effectively (21). Land, (2000) states that capacity, in general, it is the ability of individuals, organizations or society to develop and implement development goals as well as to identify and meet development challenges in a sustainable way (30). Tropical Agriculture Platform (2016) defines capacity development as the process performed by individuals, organizations and the community to unleash, promote, create, adapt and sustain capacity, over time. The development of the extension organization capacities (Network or sources of supplying the extension service for breeders, specialized units and workers in which) is considered a prerequisite for achieving effective adaptation and response to the local environment, opportunities and challenges, and the preparation and implementation of effective extension programs that meet the requirements of breeders. Developing the capacity of the Guidance organization is a responsibility of the senior management for the organization with the participation of the central administrations and the employees(9, 13). The methods, strategies, and programs of capacity development vary and it is very important to take advantage of all these sources. Interaction, coordination and joint action between the providers of the extension service itself and other actors, particularly scientific research, universities, technology supply sources, production requirements, buffalo breeders and their organizations is considered an essential foundation for the development of extension capacity. Keeping abreast of developments in the field of

agricultural extension at the global level and interacting with relevant development organizations is considered an important source for developing the capacity of the country's extension organization. The researchers presented many perspectives on the fields of these capacities, some of which distinguish between two types of capacity:

a- Technical capacity refers to knowledge and skills that are linked to the organization's objectives.

b- Functional capacity refers to the knowledge, skills, attitudes, and behavior required to use and coordinate technical capabilities so that individuals and organizations work effectively (30).

### **Third Field: Service Feasibility Development.** It includes the following items

#### **First: Extension service based on the basic problems and requirements for breeders and the characteristics of their farming systems**

The literature, studies and specialized scientific conferences in the field of agricultural extension, as well as international agricultural development organizations, emphasize that the basic problems and requirements of rural people, including buffalo breeders in all their categories and fields of work, and the characteristics of their farming systems (their activities) are the basis for building useful programs for breeders, Relevance and achieving a development for their knowledge, skills, practices, technologies and management of their agricultural activities, protect them, increase their productivity and production, and achieving their satisfaction. There are a variety of strategies to achieve this approach - extension service based on the needs of breeders and the characteristics of their farming systems - including decentralization of the planning of extension programs, achieving the participation of the Targeted categories and their organizations or their representatives at all stages of the preparation, implementation, follow-up, and evaluation of the extension programs implemented for them, the proper interaction with the Targeted categories and their organizations, Prepare and modernize objective databases.

#### **Second: Quality of the content of the extension service**

Quality is a term whose meanings, uses, and definitions have been varied, making it impossible to provide an agreed common definition. Two main trends can be discerned in these definitions. The first is that quality means conformity to specifications and the second means appropriateness of use which means the appropriateness, requirements, and expectations of the client (23,26).

#### **Third: Expanding the use of modern methods and means of communication**

The success of the extension work depends to a great extent on the good choice and implementation of methods and means of communication. Today, the world is witnessing a rapid and sophisticated revolution in the world of communication, which has shortened the time, reduced distances, and shows the most accurate details and steps of action or procedure. Therefore, It is very important to make the most of this development in the field of extension service, including the use of modern communication technologies in a wide and effective range, including Internet, mobile and others, in order to achieve speed and wide scope in communication with breeders as well as diversifying the teaching methods used in education including In accordance with the capacities of the Targeted categories, and the establishment of a network of guidance between extension workers and buffalo breeders in each region, and encourage and support breeders to form professional groups or organizations in the field of their activity with the importance of diversity by categories of workers in this activity in different regions, and the development of existing ones.=

#### **Fourth: Appropriate financial allocations**

Financial allocations are considered one of the main inputs for the extension system. However, one of the main problems of this system in many developing countries is the lack of financial allocations, which negatively affects the volume of extension activities and programs provided to rural people in all fields of their agricultural activity. Therefore, the development of the extension service in Iraq and in all fields of agricultural activity necessitates the monitoring of adequate and



sustainable allocations, especially as Iraq is one of the countries that have the financial capabilities, and the good use of financial allocations in programs, projects, and activities of high feasibility and quality.

#### **Fifth: Follow-up, evaluation and continuous improvement**

Follow-up is a process that focuses on the implementation of activities, projects, and programs to verify compliance the implementation with the plans and to identify the gap and treating it to ensure proper implementation, including follow-up of targeted application of practices and technologies being deployed. The evaluation is an continuing process that accompanies the activity, project or extension program from the beginning of thinking and after the completion of its implementation to verify its feasibility, suitability and safety of its components and knowledge of the results achieved, goals and reactions aimed at reaching appropriate decisions on the program and its development (7). Thus, follow-up and evaluation are considered managerial tools for the development of work, two key elements in the extension service activities, projects and programs and in the extension system as a whole; where they focus on achieving an orderly flow of information on extension service, They serve:

- a- The targeted categories by obtaining a service that is feasible and appropriate and meets their needs and satisfaction
- b- The workers in the programs in order to help them to detect and address weaknesses and gaps
- c- Decision makers, by achieving an orderly flow of information on programs to reach appropriate decisions.

Therefore, It is very important to achieve effective follow-up and evaluation of the extension service based on a framework, indicators, standards, methods and means appropriate to achieve the objectives of the two mentioned processes, and to adopt the results of this in the decision-making process for the extension service and developing it, with the importance of achieving an effective participation of the targeted in the following up and evaluating the extension service offered to them, and their role should not be confined

to providing data or receiving the results of the evaluation, but to move to higher levels in their participation in these processes and to participate actively in all the procedures of the evaluation process and adapting their responses to the provided service to them mainly in the evaluation and development. Continuous improvement means a constant search for new methods that advance the current level of performance (2), it is one of the key pillars for Total Quality (19). It is the activity by which the agricultural extension system improves the quality of its responsiveness to the problems and requirements of the renewable and diversified buffalo breeders in the field of developing their agricultural activities, achieving their satisfaction continuously and achieving the objectives of the system.

#### **Fourth field: Convenient external environment.**

It includes the following items:  
**First: An appropriate enabling environment**  
 Enabling environment is a broad term (30) located outside the authority of the Extension Organization Management. Among the provisions of this term are legislation and policies, which form the context within which guidance and targeted categories work, and greatly affect the success and effectiveness of the extension service. Therefore, it is very important that the enabling environment, especially the legislation and policies, be appropriate, encouraging, stimulating, consistent and non-contradictory, achieve adequate financial allocations for research, guidance, and technology, and support for buffalo breeders and farmers (supporting buffalo breeding inputs and supporting their outputs), and easy loans for them, Especially the poor, to encourage them to adopt appropriate practices and technologies, accelerate and expand their spread in their fields, and enable them to develop their activities, productivity, production, and quality improvement, supplying the breeders with necessary feeds and vaccines, and encouraging investment in the development of buffalo and the manufacture of its products.

#### **Second: Appropriate infrastructure**

The development of buffalo breeding requires the provision of adequate infrastructure, including milk collection centers, suitable

refrigerated transport media, tools, milk production plants, encouraging markets, etc. The existence of adequate infrastructure is an effective external factor in the effectiveness of the extension service.

### **Third: Implementation of a national buffalo development program**

The conservation and development of buffaloes as a national treasure in Iraq necessitates the implementation of a national program for the development of this wealth, in which the research, production, extension, veterinary, services, etc., along with the national programs witnessed by the agricultural sector since the second half of the nineties of the last century, each focused on the development of Agriculture of strategic crops - rice development program, Tomato development program, wheat development program - or dissemination of modern irrigation technologies, where these programs forming or developing solutions (practices, technologies, and recommendations) focused on solving a key productivity problem and deploying these solutions in targeted fields. National agricultural programs are considered an effective strategy in the development of productivity and agricultural production and constitute an environment conducive to effective extension services.

### **RECOMMENDATIONS**

The researchers recommend that the Ministry of Agriculture - policy makers and decision makers in the Ministry's office and in related formations - the Extension Department, the Veterinary Service, and the Animal Resources Department. A workshop to study the proposed Visualization in this research in order to benefit from it in developing the effectiveness of the extension service for buffalo breeders.

### **REFERENCES**

1. Aerni P., K. Nichterlein, S. R., and A. Sonnino. 2015. Making agricultural innovation systems(AIS) work for development in tropical countries, Sustainability Journal,7,831-850.
2. Al-Amiri, S. M., and T. M. Al-Ghalbi. 2011. Management and Business.3<sup>rd</sup> ed. Dar Wael Publishers, Oman.Jordan.
3. Al-Anzi, S. A.. 2015. Organization Theory (Concepts, Approaches, Processes). Al-Sisban

Library for Publishing and Distribution, Baghdad

4. Al-Jadri, A. H.. 2015. The Methodological Foundations and Statistical Usages in Educational and Human Sciences Researches.1<sup>st</sup> ed. Ithraa for Publishing and Distribution, Oman, Jordan
5. Al-Kubaisi, D. M. A.. 2015. The Status of Extension Service, Veterinary and Equipment Provided to Buffalo Breeders in the Two Regions of Al-Fadhili and Al-Dahab Alabied Villege, Baghdad province. Unpublished MSc Thesis. Agricultural Extension and Technology Transfer Department, College of Agriculture, University of Baghdad
6. Al-Taiy, H. K. 2014. Suggested approach for reforming agricultural extension system. Journal of Iraqi Agriculture (Research) Proceedings of the Ninth Scientific Conference of Agricultural Research, 19 (7): 202-2016
7. Al-Taiy, H. K. 2016. Improving the quality of dissemination of agricultural technologies in arab countries. Journal of the Arab Organization for Agricultural Development. Third periodic meeting of the officials and experts of research and technology transfer in the field of plant production, which was established by the Arab Organization for Agricultural Development for the period 27-29 / 12/2015, Khartoum,Sudan
8. Arnoud B. and D. Duves. 2008. The farmer field school approach –history, global assessment, and success stories, IFAD
9. Barman U. .2013. Capacity building of extension workers as facilitators under group approach of extension: issues in Indian context. Indian Journal of Science,2(3):5-7
10. Burton E. S. and R. Rajalahti .2010. Strengthening Agricultural Extension and Advisory Systems. World Bank, Washington. CD
11. Christopher I.. 2010. Mobilizing the Potential of Rural and Agricultural Extension. FAO, Rome
12. FAO. 2000, Field Farmer Schools, Integrated Soil Management and Plant Nutrition, Rome
13. FAO. 2010. Mobilizing the Potential of Rural and Agricultural Extension, Rome
14. FAO. 2011. Conservation and Expansion, Policymakers' Gguide on Sustainable

Intensification of Crop Production for Smallholders, Rome

15. FAO. 2015. The State of Food and Agriculture in the World - Innovation in Family Farms, Rome
16. FAO & KIT. 2016. New Directions for Inclusive Pluralistic Service Systems Report of FAO Expert Consultation. Rome
17. FAO & KIT. 2016. Towards Inclusive Pluralistic Service Systems Insights for Innovative Thinking. Rome
18. FAO.2017. The Future of Food and Agriculture Trends and Challenges, Rome
19. Hammoud, K. K. 2010. Quality Management and Customer Service, 3<sup>rd</sup> ed, Dar Almasirah Publishing Distribution & Printing, Oman. Jordan
20. International Livestock Research Institute(ILRI).2008. Concepts and Practices in Agricultural Extension in Developing Countries: A Source Book. IPMS Ethiopia Org
21. Juvvadi, D. P..2013. Capacity Building in Extension : Key to Climate Smart Agriculture. Center for Good Governance, Hyderabad.
22. Ministry of Agriculture, Planning and Follow-up Department. 2015. Strategic Plan of the Ministry of Agriculture for the Years 2015-2025. Baghdad
23. Najim, N. A. 2013. Introduction to Project Management.1<sup>st</sup> ed. Alwarraq Establishment For Publishing & Distribution, Oman, Jordan
24. Prior, R. M. 2013. Developing an agricultural innovation system to meet the needs of smallholder farmers in developing countries. Extension Farming Systems Journal, 9(1):258- 263.
25. Qamar, M. C. 2005. Modernization of National Agricultural Extension Systems, Practical Guide for Policymakers in Developing Countries, Food and Agriculture Organization of the United Nations, Rome
26. Remco M., L O., and V. Bitzer. 2016. Quality of Content in Agricultural Extension. KIT Sustainable Economic Development and Gender
27. Rivera W. and M. K. Qamar. 2003. Agricultural Extension, Rural Development and the Food Security Challenge, FAO, Rome
28. Rivera W .2001. Agricultural and Rural Extension Worldwide. FAO ,Rome
29. Sethi R. C. and R. B. Shabma.2011. Effective extension approaches for sustainable agricultural development. International Journal of Farm Sciences, 2(1): 116-123
30. Tropical Agriculture Platform(TAP).2016. Common framework on capacity development for agricultural innovation systems, guidance note on operationalization, Rome
31. The World Bank .2012. Agricultural Innovation Systems, an Investment Source Book, Washington. D.C.

: