



## REVIEW ARTICLE

# THE ROLE OF AGRICULTURAL EXTENSION AGAINST THE CHALLENGES THAT FACING FARMERS WITHIN THEIR AGRICULTURAL ACTIVITIES

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### Abstract

The research goals were to explain the role of agricultural extension against the challenges that facing farmers within their agricultural activities, through a theoretical review of the challenges facing farmers, which are low productivity, the deterioration of agricultural wealth in the plant and animal fields. As well as, the deterioration of agricultural and natural environmental resources represented by water scarcity, food crisis, agricultural land degradation, and agricultural risks. Besides, clarify the roles that agricultural extension plays against the challenges facing farmers within their agricultural activity. The roles have been defined, service, processing, marketing, the role of extension in improving rural livelihoods, managing natural and environmental resources, extension role in achieving food security, the extension role in managing agricultural risks. In addition to the requirements to face the challenges that face farmers within their agricultural activity are represented in the formulating strategies and policies for agricultural extension, developing technical capabilities for agricultural extension agents, updating the agricultural extension approach, developing and strengthening partnerships between the public and private sector, decentralization of extension work.

**Keywords :** Agricultural Extension, Challenges, Farmers Agricultural Activities

### **The challenges facing farmers within their agricultural activities**

Agricultural activity is the main source of the economy after oil. However, in recent times this activity has declined a lot, especially during the past three decades in which Iraq was subjected to wars and economic sanctions. As well as, the international, local, population, environmental, technological, and natural variables such as climate fluctuations, and the economic variables represented by fluctuations in the prices of crops and the production elements (Al-Juburi *et al.*, 2012). Furthermore, the lack of required information about the future conditions and other variables that it is difficult for the farmer to estimate it accurately or tolerate its impact on its own due to the difficulty of to predict or control it, which resulted in a transformation of agriculture into a complex industry in which multiple forces interact. The first one relates to the human that occupies the agriculture and the second is related to nature and the factors affecting it, such as land, air, and water, which led to the presence of many problems that are harmful to agriculture and the extent of the damage may reach crisis or catastrophe (Omar, 1992). Several studies confirmed that where the inadequate human use of agricultural lands, soil erosion, and fertility degradation of the land (Al-Shathly, 2009), and the poisoning of agricultural products resulting from the overuse of both the herbicides and the fertilizer, water scarcity as a result of poor use of environmental resources (Abu Zayd, 2014). In addition to infecting insects and fungal diseases (Abu Hadid, 2010), as these risks can lead to severe consequences that may reach the impact on the quality, effectiveness, and efficiency of agricultural inputs, and the result of all of this was the emergence of challenges facing the agricultural sector in general and the agricultural extension system in particular as follows:

### **Low productivity**

The agricultural sector suffers from low productivity and a lower share of agriculture from public investment, low financial allocations (Latif and Odeh, 2019). Besides, the weak technical field used in agricultural production operations and the spread of agricultural pests and the inability to control them properly, and the use of human capital has intensified against the decline in technological capital intensity (Maher, 2017). In addition, the backwardness of the technological methods used which are among the most important factors in decreasing production rates (Resun, 2016), the low productivity, whether related to farm productivity, unit productivity, or animal production (Ministry of Planning, 2013). As producers, face several problems, such as obtaining production requirements as well as high prices of production inputs, low government support for the private sector, and low spending on infrastructure, inducing and development (Al-Dujaili, 2014).

### **The deterioration of the agricultural and natural environmental resources**

They can be represented by water scarcity, where agriculture is the largest consumer of water, consuming 69% of the total water (FAO, 2002). The Arab world uses (76.8%) of its water resources (Arab Organization for Agricultural Development, 2007), while in Iraq the percentage may reach to (90%) (Arab Organization for Agricultural Development, 2008), accordingly, water resources in Iraq are limited and insufficient. It faces several problems, including environmental problems represented by climate changes and global warming, which led to the occurrence of drought resulting from a large decrease in the amount of rain and thus low water revenues (Al-Baghdadi, 2013). Besides, a large proportion of agricultural land is located in semi-arid regions and that 68.4% Fflowing from neighboring countries, as the problem of backwardness of irrigation methods and their systems consumes a large amount of water and low irrigation

efficiency in them, thus increasing the rate of water loss (Khaddam, 2001).

### **Degradation of agricultural lands:**

The increasing of the population and inappropriate agricultural practices led to the deterioration of the soil's biological life and the disruption of the relationship between the elements of the environment and the organisms in which they live. All of that led to the continuous deterioration of the natural resource base (Shalaby, 2013), which led to a decrease in the agricultural holdings to exploit it economically (Ministry of Planning, 2013). The weakness and deterioration of soils, the increasing salinity, the absence of vertical expansion, and the use of traditional patterns in agriculture (Zamili and Sajit, 2018), all this led to that Iraq loses every year 100 thousand dunums of the agricultural lands that suffer from erosion due to wind and storms (Adel, 2001).

### **Food crisis:**

The food security is one of the biggest challenges facing the world, including Iraq, as statistics indicate that the population reaches (51 million) people in 2025 (Al-Hakim, Abdul Hussein Nuri, 2013), and this number doubles in 2050 (AIC, 2017), as there are several determinants of consumer access to food, including weak systems and efficiency of food commodity markets. Furthermore, the low level of purchasing individual income, especially in rural areas, in addition to the fact that the vast majority of those who are undernourished cannot produce and purchase sufficient quantities of food (Al-Zadjali, *et al.*, 2010). This indicates sustainable rural poverty, fragile food security, and a large, persistent, and increasing food-deficit costs Iraq hundreds of millions of dollars annually to import millions of tons of food products, plants and animals to fill that deficiency (Al-Tai and Hussein Khudair, 2008).

### **Agricultural risks**

Humans deal with nature unconsciously, as they misuse, natural resources, which entails many risks that are reflected in humans, animals, plants, agricultural and non-agricultural soils. Therefore, the risks are the emergence of many crises, such as losses in lives, money, production, and the availability of natural resources (Brania, 1992). The agricultural sector is more vulnerable to risks, especially those related to climatic, environmental and technological changes, as well as infection with insects and fungal and viral diseases, especially, what the world in general and Iraq in particular face, is the infection with Covid-19 virus, which affected a negative impact on the agricultural sector, (Obaidat and Baker Mohammed, 2020). The inability of farmers to reach their farms due to the curfew imposed, and its effect on the marketing of various agricultural products due to the disruption of official institutions, the lack of purchasing power and the focus of consumers on basic commodities. Moreover, the presence of surplus products in farms cannot be marketed due to total isolation, in addition to the low market prices compared to the cost price, and do not deliver the product from the farm to the market due to total isolation. Accordingly, addressing the challenges that Iraq faces at this stage, foremost of which is the Covid-19 virus, and facing increasing productivity and agricultural (plant and animal) production, improving its quality and sustainability, improving farmer's incomes. As well as, protecting and

sustaining natural and agricultural resources and wealth are a shared responsibility by all institutions. Especially the service institutions that seek through their research, economic and extension devices to face these challenges through the roles that they play, including the agricultural extension system (The word bank, 2012).

### **The roles of agricultural extension against the challenges facing farmers in their agricultural activities**

The agricultural extension aims, through its extension of educational, agricultural programs to food security and clothing targeting the benefit of all the society members, especially the poor, which leads to improving agricultural production in Iraq. As whenever the risks facing agricultural work is few, there is an expansion in agricultural production and increasing the quality that increases the likelihood of self-sufficiency on a significant scale (Mansour, 2000). However, to achieve this, the Agricultural Extension Agency is required to work on developing new roles that are compatible with modern global trends (Swanson, Burton, 2010), and defines the role as "a set of rules, values, and patterns of interaction associated with a specific group of individuals (David, 2014). Accordingly, the roles that the Agricultural Extension Agency should play would be discussed against the challenges that facing farmers within their agricultural activities, as follows:

#### **The service role**

One of the basic requirements for carrying out any agricultural work that the farmers have the requirements and tools to perform this work, which are varied and in different forms and according to the developmental stages of the agricultural work. As well as, the variety of their sources and multiplicity, including the governmental and non-governmental, the service role is "the process of identifying the needs of those targeted from the requirements for carrying out their activities and determining the sources of their availability in a manner that meets their needs and at the appropriate times" (Al-Kubaisi, 2014). Accordingly, the service role played by the Extension Agency can be described as an organizational role through which extension activities flow to carry out a cognitive, skill, and desired trend changes and follow up the application of agricultural practices leading to the development of their agricultural activity (Nageeb, 2008).

#### **The Processing role**

The processing role played by the Agricultural Extension Agency is to determine the needs of farmers from the requirements they need to carry out their agricultural activities and to determine the sources of their availability and procedures, as well as preparing an appropriate processing mechanism that meets their needs (Al-Kubaisi, 2014). Accordingly, the Agricultural Extension Agency processed farmers with the requirements based on their needs in terms of quantity, quality and timing, then prepares final Tables in the required quantities and identifies the sources of obtaining them to be from reliable sources. As well as, following up on the processes of supplying those requirements and the processes of processing and using from farmers and following up on their results (Al-Taie, *et al.*, 2010).

### **The marketing role:**

Agricultural marketing occupies an important position as a supplement to the production process, because the agricultural product, whatever has quantitative and qualitative specifications, becomes useless unless it finds its way to the consumer within an integrated marketing system (Al-Duji and Al-Hunaity, 2002). Accordingly, the Agricultural Extension Agency focuses on promoting agricultural production through vertical and horizontal agricultural development and extends its role to rationalize farmers in dealing with the agricultural product towards good coordination of their agricultural production in local markets. As well as, export to external markets (Qeshta, Abdel Halim, 2012), thus the marketing role of the Extension Agency, therefore, be highlighted as follows: (Al-Irshaidat and Jamal Muhammad, 2014). Organize farmers who have common resources and interests into productive groups within their communities. Helping farmers to access guaranteed markets through access to marketing information about crops and products that have an economic competitive advantage for their production and marketing within the different agricultural environments in their areas. Obtaining production inputs like seeds and fertilizers, subjecting agricultural production to free-market economies by accelerating technology transfer, and training in the field of production and practices of necessary management to successfully produce various high-value agricultural commodities and crops under market specifications. Finally, educating farmers to apply agricultural technology correctly to increase agricultural products and thus increase the productivity that achieves the rewarding return for farmers in light of competition and market mechanisms (Abdul Malik, 2011: 16).

### **The extension role in managing natural and environmental resources**

The sustainability of natural and environmental resources constitutes the importance and priority of agricultural extension programs (Afro-Asian Rural Development Organization, 2007). They represent by implementing programs on integrated control, attention to biological control, and rationalizing the consumption of chemical herbicides in the field of plant pest control, water use efficiency and economic irrigation methods, safe use of agricultural herbicides, maintenance and conservation of agricultural soils from erosion, water harvesting and utilization of treated water. Extension brochures about the severity and harm of plastic waste on livestock, the use of organic fertilizers and the use of farm waste, training farmers to use the best methods for sustainable management of natural resources and agricultural practices, and use technologies that conserve resources, chemical control, soil and water protection.

### **The extension role in improving rural livelihoods**

Improving rural livelihoods is the main objective of the Agricultural Extension Agency that works to increase the income of the rural family, use modern technologies to carry out social and economic changes in rural societies. Besides, provide the infrastructure for a decent life through the provision of health and educational services and service facilities from drinking water and sanitation, as well as helping farmers diversify and adapt agricultural systems,

especially in producing high-value crops (World Bank, 2014).

### **The extension role in achieving food security**

The agricultural extension works to achieve its objectives represented by developing the knowledge and skills of the farmer family in all its categories by relying on scientific methods in agricultural work to increase productivity. In addition to improving farmers incomes (workshop, 2019), through its agricultural educational extension programs that seek to achieve food security by working to fill the food gap through cooperation with scientific research centers and universities to address the problems that facing farmers and following their circumstances (Al-Tounoubi, 1996). They are reflected in the development of the resources of rural society, and thus improving the nutrition and food security of the family. However, it depends on what the agricultural to farmers achieve at the level of their agricultural production in the plant and animal fields to facing the agriculture challenges, foremost of which is food security and improving the contribution of agriculture to the gross local production and the national economy that depends on agricultural production (Ministry of Agriculture, 2015). Therefore, the farmers service, specifically meeting their needs and processing inputs to them, addressing the problems they face and providing support to them and facilitating their interaction with relevant agencies. Also, organizations to help them develop their managerial, organizational and technical skills and practices, and promoting the optimal use of food to achieve a balanced diet. Finally, they aim to develop and disseminate appropriate technology that ensures the achievement of stable and sufficient food support that leads to a sustainable show of agricultural and food products, which are among the priorities of agricultural extension work to facing the challenges.

### **The role of agricultural extension in managing agricultural risks**

The improvement of agricultural production in Iraq is by developing agricultural work to reduce the risks to the agricultural sector. Thus, whenever the risks were few, there will be an expansion in agricultural production and an increase in its quality (Mansour, 2000), accordingly, the role of agricultural extension in managing the risks to the agricultural sector is highlighted and represented by the following duties (Al-Gargooli, 2006; Abu Zaid, 2014; Saleh, 2009). Careful planning through predicting the possible difficulties, working to avoid them, preparing for problems and crises before they occur, and dealing with them decisively during their occurrence by studying the reasons that may lead to their occurrence. Study the reality of the region to identify the problems that may cause the occurrence of risks to confront them early, by providing correct information and data to develop an accurate plan that includes setting priorities among the objectives to be achieved, and determining adequate budgets. Implement an action plan in the light of which agricultural extension can eliminate or reduce the effects resulting from agricultural risks, through which can implement the educational extension activities while adhering to the duties and roles of workers in the extension program. Besides, determining the progress through assessing the results achieved by the program in light of the changes that occurred in the farmers' behavior. Furthermore, helping farmers make their decisions

about managing their farms, crops, material and financial resources to reduce risks, and Increasing the efficiency of farmers' use of their agricultural resources. Finally, encourage the using of appropriate agricultural technology and practices for sudden environmental changes in each region and according to the prevailing conditions in it, when the expected and unexpected environmental risks occur, such as spreading suitable varieties with fewer water needs, reducing the areas of crops that consuming water, cultivating alternative varieties with low water consumption.

### **Requirements against the challenges facing farmers within their agricultural activity**

The development of the organizations and systems performance and improving the quality of services provided to farmers, particularly the poor, are at the forefront of the basic requirements. Accordingly, the Agricultural Extension Agency that its importance highlights by the existence of a direct relationship between the agriculture development level and the development of its extension system (Hussein and Khudair, 2014) requires performing the aforementioned roles through the requirements to facing these challenges. These roles include formulating strategies and policies for the agricultural extension that are compatible with the requirements of achieving the objectives of each stage to provide an appropriate framework for developing the quality of extension services. Moreover, developing the technical capabilities of agricultural extension agents, which are the major challenges facing the agricultural sector in general and the Agricultural Extension Agency in particular. These challenges require the development of its human inputs in quantity and quality in a manner commensurate with the requirements to facing those challenges, which is the representation of a database on the Agricultural Extension Agency. Identifying the need for administrative, executive, supervisory and extension personnel in the light of criteria represented (the nature of the basic agricultural activities in each region, the scope of supervision, the identification of training needs for agricultural extension agents, a continuous evaluation of employee performance (Al-Taie and Hussein, 2014). As well as, updating the agricultural extension approach, where the traditional approach faced many criticisms, especially its weak effectiveness and the impact of the participation of targets, which led to the spread of alternative approaches that differ in the speed and range of its spread and results. However, there is no method suitable to be applied in all times and conditions (Qamar, 2005), it can be observed that the field school curriculum has seen a rapid spread in many regions of the world because it is based on an innovative approach characterized by participation and learning by discovery. Besides, teaching and learning in the field will be by experience and practice (Aroud and Duves, 2008:). Furthermore, Developing and enhancing the partnership between the public and private sectors by expanding the base of non-governmental organizations' participation with the public sector to improve the quality of the extension service provided to farmers in the plant and animal fields by encouraging investment. Also, the coordination between the bodies that are concerned with providing extension services to farmers by defining roles, activities, and methods of work in the light of needs and problems, and provide the necessary support and facilities. Using electronic extension in the work of agricultural extension, as the extension service can be provided through

an electronic extension that helps to raise the efficiency of providing extension services and activating the role of agricultural extension agent and helping farmers to participate and self-education, as well as developing and modernizing agriculture (Qeshta, Abd Al-Halim, 203-202). Finally, Applying decentralization in the work of agricultural extension by achieving actual participation between the various department, which contributes to reaching rational decisions, speeding up work. It also reduces the burden on the higher administrations, thereby providing them with the opportunity to devote themselves to the important matters, the participation of farmers in decision-making up to their responsibility for those decisions (Assaf, Abdel-Moaty, 2013).

### **Recommendations**

- 1- The Agricultural Extension Agency should study the main causes that may lead to the occurrence of agricultural risks and focus on the solutions needed to treat them.
- 2- Preparing suitable extension programs against the challenges facing farmers within their agricultural activities.
- 3- Training and qualifying the workers in agricultural extension in the field of managing the problems facing them within their agricultural activities.
- 4- Educating farmers and raising their interest in important environmental issues, including the facing Covid-19 and its impact on water resources and agricultural lands ... etc.
- 5- Increasing water and environmental awareness to maximize the use of natural resources.

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