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وحماية المستهلك

PROBLEMS FACING AGRICULTURAL EXTENSION SERVICE PROVIDERS TO FACE THE EFFECTS OF CLIMATE CHANGE IN BAGHDAD GOVERNORATE

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ABSTRACT

The research aimed to determine the problems facing agricultural extension service providers to face the effects of climate change, the research community included all workers in the provision of agricultural extension service in the province of Baghdad and distributed to the Department of Agriculture of Baghdad Karkh and agricultural divisions affiliated to it and the Department of Agricultural Extension and Training in the province of Baghdad, the number of (110) individuals. All members of the community were taken as a sample for research due to their small number. To achieve the objectives of the research, a questionnaire was prepared to collect data from the respondents, consisting of (28) items distributed in three areas (problems concerned to farmers, problems concerned to agricultural extension service providers themselves, problems concerned to coordination and government support). The results of the research showed that there are several problems that hinder the workflow of service providers' agricultural extension services in providing their extension services to farmers in the field of facing the effects of climate changes in varying degrees, as the problem of the lack of specialists in agricultural extension in the field of climate changes came in the first place in terms of importance, which got a weighted mean of (3.68) degrees and a weight percentile of (92%), While the problem of extension service providers not having the skills and knowledge in determining the best agricultural practices to face climate change came in the last place in terms of importance, which got a weighted mean of (3.13) degrees with a weight percentile of (78.25%). The researcher recommended the necessity of adopting the research findings regarding the problems faced by agricultural counseling service providers and working on resolving them through the development of a training and educational plan to enhance their skills and capacities in dealing with agricultural challenges associated with climate change. Additionally, it emphasized the importance of governments and financial institutions providing financial and moral support to enhance their ability to deliver effective agricultural counseling services and assist them in tackling the challenges and problems they encounter.

Keywords: Agricultural extension service, Climate changes, Agricultural extension.

المجلة العراقية لبحوث السوق وحماية المستهلك

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المشكلات التي تواجه مقدمي الخدمة الارشادية الزراعية لمواجهة اثار التغيرات المناخية في محافظة بغداد

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الخلاصة

هدف البحث الى التعرف على المشكلات التي تواجه مقدمي الخدمة الارشادية الزراعية لمواجهة اثار التغيرات المناخية , شمل مجتمع البحث جميع العاملين في تقديم الخدمة الارشادية الزراعية في محافظة بغداد والموزعين على قسم زراعة بغداد الكرخ والشعب الزراعية التابعة لها ودائرة الارشاد والتدريب الزراعي في محافظة بغداد والبالغ عددهم (١١٠) فرداً ، اخذت جميع افراد المجتمع كعينة للبحث لقلة عددهم . لتحقيق اهداف البحث اعدت استبانة لجمع البيانات من المبحوثين متكونة من (٢٨) فقرة موزعة على ثلاث مجالات (مشكلات متعلقة بالمزارعين ، مشكلات متعلقة بمقدمي الخدمة الارشادية الزراعية انفسهم ، مشكلات متعلقة بالتنسيق والدعم الحكومي). اظهرت نتائج البحث وجود عدة مشكلات تعرقل سير عمل مقدمي الخدمة الارشادية الزراعية في تقديم خدماتهم الارشادية الى المزارعين في مجال مواجهة اثار التغيرات المناخية وبدرجات متفاوتة ، اذ جاءت مشكلة (عدم وجود مختصين بالإرشاد الزراعي في مجال التغيرات المناخية) في المرتبة الاولى من حيث الاهمية والتي حصلت على وسط مرجح قدره (٣,٦٨) درجة ووزن مئوي قدره (٩٢٪) ، بينما جاءت مشكلة (عدم امتلاك مقدمي الخدمة الارشادية للمهارات والمعارف في تحديد افضل الممارسات الزراعية لمواجهة التغيرات المناخية) في المرتبة الاخيرة من حيث الاهمية والتي حصلت على وسط مرجح مقداره (٣,١٣) درجة بوزن مئوي قدره (٧٨,٢٥) واوصت الباحثة بضرورة اعتماد ما توصل اليه البحث من نتائج تخص المشكلات التي يعاني منها مقدمي الخدمة الارشادية الزراعية والعمل على حلها من خلال وضع خطة تطويرية لتدريب وتعليم المقدمين على هذه المهارات وتعزيز قدراتهم للتعامل مع التحديات الزراعية المرتبطة بالتغيرات المناخية فضلاً عن ضرورة تقديم الحكومات والمؤسسات المالية دعمًا ماليًا ومعنوياً لتعزيز قدرتهم على تقديم خدمات إرشادية زراعية فعالة ومساعدتهم على التعامل مع التحديات والمشكلات التي يواجهونها.

الكلمات المفتاحية: الخدمة الارشادية الزراعية، التغيرات المناخية ، الارشاد الزراعي.

INTRODUCTION

The agricultural sector is one of the most important economic sectors in most countries of the world, as it contributes to providing food needs as well as commodities and raw materials as inputs to a number of manufacturing industries and thus contributes to achieving the gross domestic product of any country **(Arab Monetary Fund, 2019)**. In general, the agricultural food sector provides available food energy to consumers, accounting for approximately 30% or more of the total **(Al-Saffar, 201٧)** ,Climate change is one of the most important and dangerous environmental issues facing the planet today. Its effects are being felt globally, but the impact varies in different regions due to the diverse nature of the environment **(Salih, 2009)**. In Iraq, the agricultural sector plays a significant role in providing local income and securing the food needs of the population. However, the rapid increase in human activities without considering their environmental impact has led to major shifts in the Earth's climate, resulting in climate change **(Abdulkareem *et al*.,2011)** Climate change poses significant challenges to the agricultural sector, affecting the growing seasons of crops and ultimately impacting agricultural food production. Rising temperatures and changing rainfall patterns have led to a sharp decrease in the level of drinking and irrigation water, further exacerbating the situation **(Saqar, 2014)**. Moreover, the severity of climatic changes, such as desertification, dust storms, and soil salinity, has added additional pressures on farmers and their economic conditions **(Towij, 2021; Mohammed,2016).** The consequences of climate change and its potential future impact are alarming. Without effective strategies to mitigate these changes, it is

projected that the air temperature will continue to rise, further threatening agriculture and global food security **(Al-Taye *et al.*, 2021)**. Recognizing the urgency of the situation, Iraq, along with other nations worldwide, is actively seeking appropriate agricultural methods and practices to address the effects of climate change. The focus is on developing sustainable solutions while preparing and training workers in institutions responsible for the agricultural sector's development **(Al-Taye *et al.*, 2020) .**In this context, the role of the Agricultural Extension Agency is crucial. As an essential element in achieving sustainable agricultural development and food security, the agency is responsible for addressing the various effects of climate change on agriculture **(Al-Taye *et al.*, 2020)**. It has transformed into an institutional network that supports knowledge and provides vital support beyond the conventional definition of the public sector **(Al-Saaedy &Al-Badri, 2022)**. It seeks to advance the agricultural sector and develop the skills and knowledge of farmers **(Naji &Hamza, 2019).** Through education and training, the agency plays a pivotal role in empowering rural communities to make optimal use of natural resources and adopt modern agricultural techniques **(Moawad &Amer, 2007; Abdulrazzaq &Salman, 2018)** To ensure the success of the extension institution and its ability to overcome the challenges posed by climate change, it is essential to invest in the capabilities, skills, and knowledge of its employees **(Habib &Abdulmaseeh, 1989)**. Agricultural extension workers, being the backbone of the institution, are responsible for effectively delivering solutions and practices to farmers, persuading them to adopt these approaches **(Durra 2003; Salman & Karim, 2016).** The performance of agricultural extension work is influenced by various external and internal factors, underscoring the need for specialized expertise and a comprehensive understanding of the field **(Taha &Naji, 2020).**

Recognizing the problems and difficulties faced by extension service providers is crucial for the institution's officials to overcome these obstacles and improve performance **(Nofan &Youssef,2021).** By addressing these challenges and focusing on the continuous improvement of services, the extension institution can fulfill its role effectively, support farmers in adapting to climate change, and contribute to sustainable agricultural development in Iraq **(Al-Hafiz &Al-Taye, 2022),** the current research came to answer the following questions: What are the problems facing the agricultural extension service providers in the field of facing climate change? What is the degree of importance of these problems from their point of view?

RESEARCH AIMS:

The aim of the research is to determine the problems facing the agricultural extension service providers to face the effects of climate change according to its importance, which includes the following sub- objectives:

1.1- Determine the problems concerned to farmers.

1.2- Determine the problems concerned to agricultural extension service providers.

1.3- Determine problems concerned to government coordination and support.

METERIALS AND METHODS OF THE RESEARCH:

Research community and sample: The province of Baghdad was chosen to conduct the current research, due to the presence of large numbers of employees who provide agricultural extension services. The research community included all workers in providing the agricultural

extension service in Baghdad Governorate and distributed to the Baghdad Karkh Agriculture Department and its affiliated agricultural divisions and the Agricultural Extension and Training Department in Baghdad Governorate, whose number is (110) individuals for the year 2022.

Research tool: A questionnaire was prepared to collect data by examining scientific sources, studies and research concerned to the subject, and consulting specialists in the subject from researchers and university professors. Accordingly, (28) problems were identified, divided into three areas: the problem of farmers with (10) problems, the problem of extension service providers with (12) problems, and the problem of government support with (6) problems.

Research scale : To measure these problems, a five-level scale consisting of five levels was developed according to importance, which are (a very large problem, a large problem, a medium problem, a small problem, and no problem) and weights were given to it (0,1,2,3,4) respectively, and to determine which of the problems were more important to the extension service providers, they were arranged in descending order of importance and depending on the weighted mean for each problem.

Validity and reliability procedures: The initial questionnaire was presented to 10 experts specialized in the current research topic to assess face validity and content validity. Validity refers to the extent to which a measurement tool is suitable for measuring the intended characteristic or phenomenon **(Atiya, 2009)**. The experts' feedback was sought regarding the research areas and dimensions, as well as the scientific accuracy of the statements, and their suggestions for modification, deletion, or addition, to reach the optimal formulation before presenting it to the respondents. To achieve this, a three-point scale was used, consisting of the expressions "Agree," "Agree with modification," and "Disagree," with corresponding weights o (3,2,1), respectively. A cutoff threshold of 75% was set for the areas and statements included in the questionnaire. Agreement among reviewers at a rate of 75% or higher indicates the tool's validity **(Drouza, 2005)**, and necessary adjustments were made accordingly.
Based on that, a preliminary pre-test was conducted on a sample of 18 respondents from the Directorate of Agriculture in Baghdad/Al-Rusafa (outside the research population) in November to assess the reliability of the scales included in the questionnaire. To measure reliability statistically, the data from the preliminary test were analyzed using the Cronbach's alpha equation. The test results showed high reliability coefficients, with a total reliability coefficient of 0.93 for the Development of Agricultural Extension Service Providers' Capabilities questionnaire. Thus, the tool is considered suitable for field application.

Data collection: Data was collected from the (110) respondents during the period from 5/12/2022 to 20/1/2023.

Data analysis: After collecting the data, it was coded and tabulated, then those data were analyzed using statistical (and manual analysis and the SPSS program), and statistical methods (weighted mean and percentile weight) were used to analyze that data.

RESULTS AND DISCUSSION

Based on the answers of respondents who are agricultural extension service providers concerned to the problems they face in the field of coping with the effects of climate change, (28) problems have been identified distributed in three fields: problems concerned to farmers, problems concerned to agricultural extension service providers, and problems of coordination and government support). The results of the research showed that the weighted mean of the problem fields according to their importance for the respondents ranged from (3.33 - 3.55) degrees and percentage weights ranged from (83.4 88.91%) with a total weighted mean rate of (3.46) degrees and a weight percentile of (86.66%), which is much higher than the mean score the theoretical mean of the scale of (2) degrees, which indicates the presence of various and many problems that extension service providers suffer from in the field of confronting climate changes that prevent them from performing their extension work in the correct scientific manner, and this gives an indication that the studied problems are really realistic problems and of great importance, which requires Standing on them and addressing them by the competent authorities concerned to these problems, as shown in Tables (1):

Table (1): Arrangement of problem fields according to the weighted mean of their importance according to the answers of agricultural extension service providers.

Seq.	Problems Fields	Weighted mean of the axis	Weight percentile of the axis	Order
1	Problems concerned farmers	3.50	87.5	2
2	Problems concerned to agricultural extension service provider	3.33	83.25	3
3	Government coordination and support problems	3.55	88.75	1
Average of the total weighted mean		**3.46**	**86.5**	

It is clear from Table (1) that most of the respondents emphasized that the problems experienced by the agricultural extension service providers are many and varied, some of which are concerned to farmers and others concerned to the extension service providers themselves as well as problems concerned to government coordination and support. The results also showed that the problems concerned to coordination and government support came in the first place in terms of the degree of importance for the respondents, as it got a weighted mean of (3.55) degrees and a percentage weight of (88.91%) the reason for this may be due to the importance of government support and its role in providing the necessary supplies to confront climate changes, which help agricultural extension service providers to perform their tasks successfully.

While the problems concerned to the extension service providers themselves came in the last rank in terms of the degree of importance for the extension service providers, as it got a weighted mean of (3.33) degree and weight percentage of (83.4%), The reason for this may be that agricultural counseling service providers face significant pressures in their daily work, such as visiting a large number of farmers, dealing with various agricultural problems, and coping with climate change and environmental risks. The workload pressure and field challenges may affect the counselors' well-being and their ability to provide quality services.

1. Problems Concerned Farmers:

The problems concerned to farmers that face the agricultural extension service providers in the field of coping with climate change, which are (10) problems, got weighted mean according to the degree of their importance to the respondents. It ranged from (3.32 - 3.65) degrees and percentage weights ranged from (83-91.25%), with an average of the value of (3.50) degrees with a weight percentage of (87.67%), which is higher than the theoretical mean of (2) degrees. Accordingly, all problems concerned to farmers impede the work of agricultural extension service providers in the field of confronting the effects of climate changes, despite the slight discrepancy between their weighted means. As shown in the table (2):

Table (2): Arrangement of problems concerned to farmers according to the weighted mean of their importance according to the answers of agricultural extension service providers.

Seq.	Problems Fields	Weighted mean of the axis	Weight percentile of the axis	Order
5	The poor financial and material capabilities of some farmers reduces their ability to apply some agricultural practices to reduce the effects of climate change.	3.65	91.2	1
4	Poor farmers' management of the irrigation process to reduce water scarcity.	3.58	89.5	2
6	Lack of farmers' review of extension units to benefit from available information about climate change.	3.57	89.2	3
3	Farmers' reluctance to participate in training and educational courses concerned to climate change.	3.54	88.5	4.5
8	Farmers' adherence to wrong and traditional agricultural practices and their unwillingness to apply modern practices to limit the effects of climate change.	3.54	88.5	4.5
10	Lack of use of the agricultural cycle system to improve systems farm by farmers.	3.51	87.7	6
9	Lack of use of organic fertilizers to improve soil fertility and moisture retention	3.50	87.5	7
2	Lack of awareness of farmers of the dangers and damages of climate change on their crops	3.44	86	8
1	Lack of knowledge of farmers about the effects of climate change on their daily agricultural practices	3.42	85.5	9
7	Lack of sources of information related to the phenomenon of climate change	3.32	83	10
Average of the total weighted mean		**3.50**	**87.5**	

It is clear from table (2) that the problem (weak financial and material abilities of some farmers reduces their ability to apply some agricultural practices to limit the effects of climate change) came in the first place in terms of the degree of importance for the respondents, as it obtained a weighted mean of (3.65) degrees. With a percentage weight of (91.25%). The reason for this may be due to the fact that the financial and material abilities, if they exist among farmers, means increasing their ability to purchase and provide some agricultural technologies and practices that contribute to limiting the effects of climate changes when applied, and thus the respondents realize the importance of the availability of financial and material abilities

among farmers. to help them perform their work successfully. While the problem (lack of sources of obtaining information related to the phenomenon of climate change) came last in terms of the degree of importance for the respondents, as it obtained a weighted mean of (3.32) degrees and a percentage weight of (83%). The reason for this may be due Agricultural counseling service providers may believe that information related to climate change is widely available and easily accessible from various sources, such as the Internet or agricultural counseling agencies. Alternatively, they may have the belief that there is already a sufficient amount of information readily available, and therefore, this problem does not pose a significant issue for them.

2. Problems concerned to Agricultural Extension Service Providers:

The (12) problems concerned to the extension service providers themselves, which they face in the field of confronting climate change, got weighted mean according to the degree of their importance to the respondents, as they ranged from (3.13-3.68) degrees and percentage weights ranged from (78.25-92%) with a median rate of (3.33) degrees, with a percentage weight of (83.4%), which is higher than the theoretical mean of (2) degrees. Accordingly, all problems concerned to agricultural extension service providers impede their work in the field of confronting the effects of climate changes despite the discrepancy between their weighted means, as shown in Table (3):

Table (3): Arranging the problems concerned to the agricultural extension service providers themselves according to the weighted mean of their importance according to their answers.

Seq.	Problems Fields	Weighted mean of the axis	Weight percentile of the axis	Order
8	The lack of specialists in extension in the field of climate change	3.68	92	1
7	Relying on traditional methods and techniques in communicating agricultural information and practices related to the issue of climate change.	3.41	85.2	2.5
9	Some technical recommendations related to reduction the effects of climate change are characterized by the difficulty of implementation by extension service providers.	3.41	85.2	2.5
3	Lack of radio and television programs on the subject of climate change.	3.37	84.2	4
4	The lack of extension apparatus and necessary supplies and tools to deal with climate change.	3.35	83.7	5
6	There is a weakness at the level of field agricultural extension units in real guidance in the field of reducing the phenomenon of climate change.	3.34	83.5	6.5
10	Weakness of the extension service provider in preparing and planning programs and activities related to reducing the effects of providing climate change services.	3.34	83.5	6.5

11	The technical recommendations provided by extension service providers on the issue of climate change are not suitable for application to farmers.	3.31	82.7	8
12	Lack of publications and pamphlets related to climate change.	3.26	81.5	9
5	Lack of sources of information related to climate change in the extension service providers.	3.24	81	10
1	The extension service providers lack methods of persuasion and effective communication with farmers.	3.2	80	11
2	The extension service providers do not have the skills and knowledge in determining the best agricultural practices to confront climate change.	3.13	78.2	12
Average of the total weighted mean		**3.33**	**83.2**	

It is clear from Table (3) that the problem (lack of specialists in extension in the field of climate change) came in the first place, as it obtained a weighted mean of (3.68) degrees and a weight percentage of (92%). The reason for this may be due to not taking the issue of climate change Considered by the Extension Institution, through the employment of a number of specialists in the field of climate change to benefit from their services in the implementation of agricultural Extension activities related to the subject, while the problem (the Extension service providers not having the skills and knowledge in determining the best agricultural practices to face climate changes) came in The last rank in terms of the level of importance, as it got a weighted mean of (3.13) degrees and a weight percentage of (78.25%). The reason for this may be due to respondents' belief that information related to the phenomenon of climate change has the potential to Determine appropriate agricultural best practices to reduce the effects of climate change, so they were the least interested in their belief.

3. Problems of Government Coordination and Support:

There were (6) problems concerned to the field of Coordination and Government Support facing agricultural extension service providers in the field of coping with climate change got weighted mean according to their importance to the respondents, as they ranged from (3.53-3.6) degrees and percentage weights ranged from (88.3-90%). With a median rate of (3.55) degrees, with a weight percentile of (88.87%), which is higher than the theoretical mean of (2) degrees. Therefore, all problems concerned to the field of coordination and government support impede the work of agricultural extension service providers in the field of confronting the effects of climate change, despite the slight discrepancy between Their weighted mean, as shown in Table (4):

Table (4): Arrangement of problems concerned to government coordination and support according to the weighted mean of their importance according to the answers of the agricultural extension service providers.

Seq.	Problems Fields	Weighted mean of the axis	Weight percentile of the axis	Order
4	Weak government awareness of the importance of the role of agricultural extension in facing climate change	3.60	90	1
3	Lack of government support for agricultural institutions and organizations in the field of reduction the effects of climate change	3.58	89.5	2
1	Lack of services provided by the state to rural areas affected by climate change	3.57	89.2	3
2	Lack of early warning stations for the effects of extreme and sudden climatic changes on farmers	3.53	88.2	5
5	The lack of a clear financing policy by the government to help farmers obtain modern agricultural practices such as modern irrigation systems.	3.53	88.2	5
6	Poor coordination between the extension departments responsible for providing services to rural people and other parties interested in the issue of climate change	3.53	88.2	5
Average of the total weighted mean		**3.55**	**88.7**	

It is clear from Table (4) that the problem (the government's weak awareness of the importance of the role of agricultural extension in facing climate change) came in the first place, as it obtained a weighted mean of (3.60) degrees with a weight percentage of (90%). The reason for this may be due to the lack of clarity The government's policy towards the agricultural sector, and therefore the absence of a clear agricultural policy to limit the effects of climate change on the agricultural sector, which negatively affected the level of knowledge and awareness of the direct role of the agricultural extension institution in providing educational extension service to farmers in the field of facing the effects of climate changes on their crops, while The problem (weak coordination between the extension departments responsible for providing services to rural people and other parties interested in the issue of climate change) came in the last place in terms of the level of importance, as it got a mean of (3.52) degrees with a percentage weight of (88%), despite its final arrangement, however, was likely a problem of great importance suffered by the agricultural extension service providers. The reason for this may be due to the absence of an administrative unit with clear functions within the organizational structure of the Agricultural Extension and Training Department concerned with the coordination process between it and other parties concerned with limiting the effects of climate change.

CONCLUSION

1- Agricultural extension service providers face multiple problems hindering their ability to effectively address the impacts of climate change.
2- These problems include issues related to farmers, extension service providers themselves, coordination, and government support.
3- The most significant problem identified was the lack of specialists in agricultural extension who specialize in climate change.
4- On the other hand, the least important problem was the lack of skills and knowledge among extension service providers in determining the best agricultural practices to confront climate changes.

RECOMMENDATIONS

1- The importance of addressing the problems faced by agricultural extension service providers and addressing them by the relevant authorities, especially the General Directorate of Agricultural Extension and Training.
2- Integrating agricultural extension service providers working in climate change adaptation into intensive and well-designed training programs that enable them to successfully perform their duties in this field.
3- Enhancing cooperation and coordination among different stakeholders with the aim of addressing the challenges associated with climate change.
4- Providing financial and moral support by the government and financial institutions to enhance the capacity of agricultural extension service providers to deliver effective services in the agricultural sector and address the challenges and problems they face.

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