Tikrit Journal for Agricultural Sciences (2019) 19 (3):101-108
https://doi.org/10.25130/tjas.19.3.13

IRAQI Academic Scientific Journals
العراقية المجلات الأكاديمية العلمية

ISSN:1813-1646 (Print); 2664-0597 (Online)
Tikrit Journal for Agricultural Sciences
Journal Homepage: http://tujas.tu.edu.iq

TJAS
Tikrit Journal for Agricultural Sciences

Knowledge of Agricultural Extension Agents with Climate Changes Phenomenon, And Their Implementation Level for Extensional Activities Which Related with It in Ninavah Governorate.

Talal Saeed Hameed*

Agriculture Extension. & Technology Transfer Department, College of Agric.& Forestry, University of Mosul. Iraq

KEY WORDS:

Knowledge- climate changes- agricultural extension agents.

ARTICLE HISTORY:

Received: 31/03/2019

Accepted: 19/05/2019

Available online: 10/10/2019

ABSTRACT

objectives of this study were to: identify the knowledge of agricultural extension agents in climate changes phenomenon, Identify the relationship between the knowledge of agricultural extension agents and some factor, and Identify the implementation level of agricultural extension agents for extensional activities which related in climate changes phenomenon. Randomly sampling procedure was used in this study, The population consisted of 50% (106 Agricultural extension agents) of the total respondents (212 Agricultural extension agents) in Ninavah governorate. The data collected through questionnaire were analyzed through different statistical techniques. data set included 19 items and were measured for validity and quality by specialist at the Agricultural Extension Department, based on the evaluation process, three of the items were removed, 20 questionnaires were excluded after determining the data consistency (reliability coefficient was 0.82). In this research descriptive statistics such as percentages, mean values and frequency tables was applying to organize and analyze the data. The results show that Majority of them were had agricultural institute. Majority of the respondents were male. level knowledge of agricultural extension agents in climate changes phenomenon is medium with a tendency to low. result show that Educational level and Gender were the factors which significant effective on climate change knowledge of respondents. Also The results showed that the most extension activities carried out by the respondents are (The awareness of negative effects of the use excessive to irrigation water) and (The awareness of Planting drought-tolerant crops). according to previous results recommended It was The agricultural extension must prepare for the new challenges Resulting of climate change through training its staff and raising awareness programs, especially for categories which were their knowledge (middle and low) in field climate change to meet their knowledge needs revealed by the results of the study.

INTRODUCTION

Iraqi agriculture Experiencing different climate change impacts which basically worsen production condition and negative effects its economies. It is clear that climate change is calls for urgent action for alleviation and also to assist the affected agriculture sector to be able for configuration systems and applications of natural and human that may be new effects in environment change (Emmanuel,2013). Climate change is a universal phenomenon that has effective negatively

* *Corresponding author: E-mail*: : stalal39@yahoo.com

on the livelihood human. climate changed if there is a sustained change in the weather elements such as rainfall, temperature and relative humidity. (Shrotriya and Prakash, 2010). This phenomenon may make it more difficult to grow plants and raise animals in the same place, which was considered to be a good home for its growth, reproduction and prosperity (Tripathi and Mishra, 2017). From here we can see the importance of agricultural extension as a means of providing information, new technologies and farmers to enable them to combat the threat of climate change (Leeuwis and Aarts,2011). also the agricultural extension has role in involved in information and education programs which can help farmers alleviate the impact of climate change(MoEFRN, 2003). These include creating awareness and knowledge mediation on climate change issues (Ziervogel et al., 2006). The best extension services are able to provide information on new technologies that address the specific constraints of research institutions to farmers and return to researchers and policy makers (Kyomo, 1992). Therefore, extension services have an important role in changing farmers' knowledge, attitudes, capacities and skills for effective adaptation to climate change (Ozor and Nnaji,2011). where, extension agents need to mobilize and help the farmers and society in application like these policies and programs and running disaster challenges. which mean improving farmers' ablity for planning, solve the problems, critical thinking, prioritization, negotiation, consensus building, leadership skills, multi-stakeholder and ultimately proactive work. This may eventually benefit climate change issues (Davis, 2009).

objectives of study

1.Identify the social, personal and economic properties of agricultural extension agents.
2.Identify knowledge of agricultural extension agents in climate changes phenomenon.
3.Identify the social, personal and economic factors influencing climate change knowledge level of respondents.
4.Identify the implementation level of agricultural extension agents for extensional activities which related in climate changes phenomenon.

Hypothesis

Ho: agricultural extension agents' social, personal and economic properties have no significant influence on their knowledge of climate changes.

MATERIALS AND METHODS

The population of the study was constituted of all agricultural extension agents in Ninavah governorate. 50% (106) respondents of the total agricultural extension agents (212) respondents were randomly selected for the purpose of this study. They had Distributed to all the divisional agricultural in the governorate, which are (22) agricultural divisional. For the purpose of collecting research data, a questionnaire was prepared consisting of two parts: the first part consists of personal, social and communication factor (educational level, age, gender, specialization, the work location, duration of employment, Agricultural information resources). this variable has been measured by the allocation of numeric values: educational level: (Preparatory agriculture, agricultural institute, Agriculture Faculty and Postgraduate) and was given numeric values (1,2,3,4) respectively. Age: by the numbers of years. Gender: male and female (1,2) respectively. The specialization: was measured according to the following indicators (extension agricultural, other specialization) (1,2), respectively. the work location: (village, district center, province center, governorate center) (1,2,3,4) respectively. duration of employment: numbers of work years. Agricultural information resources: measured by the following indicators (often, sometimes, not use), (1,2,3) respectively. which included agricultural television programs, agricultural radio programs, agricultural conferences, and institutes and Agricultural colleges, training courses, friends and neighbors, personal experience, agricultural seminars, the Internet, others). The second part consists of a test to assess the level of knowledge of agricultural extension agents in the phenomenon of climate changes. The test consists of a set of questions all of these questions were of type (true and false) where included two alternatives for each

item and 19 items for the questionnaire as final form and has been given number (2) as a numerical value for the correct answer and one for the wrong answer. data set included 19 items and were measured for validity and quality by specialist at the Agricultural Extension Department, based on the evaluation process, three of the paragraphs were removed, 19 questionnaires were excluded after determining the data consistency (total reliability coefficient was 0.82).

RESULTS AND DISCUSSION

1. Identify the social, personal and economic properties of agricultural extension agents.

Table 1 show that majority 45.28% of the respondents completed agricultural institute, 31.13% of them were completed Preparatory agriculture, while 19.81% of the respondents were completed Agriculture Faculty, and just 3.78% had postgraduate. 45.28% of the respondents were aged between 26 and 30 years. while 31.13% of them were aged between 21 and 25 years. The mean age was 20.14 years. 84.90% of the respondents were male while 15.10% were female. Also the results showed that 27.35% of respondents were their Specialization in Agricultural extension, and 72.65% of them were in other Specialization. 45.29% of respondents their location of work was in governorate center, 23.58% of them working in district center and the average of duration of employment was 17.6. More than half of respondents were duration of employment 14 year and 21 years. and their exposure to agricultural information resources were between 14-22.

Table 1: Distribution of respondents according to social, personal and economic properties.

The factor	Frequency	%	Mean	S.D
Educational level				
Preparatory agriculture	33	31.13		
agricultural institute	43	45.28		
Agriculture Faculty	21	19.81		
Postgraduate	9	3.78		
Age				
21-25 year	33	31.13	**24.14**	**4.43**
26-30 year	48	45.28		
31-35 year	13	12.26		
36-39 year	12	11.33		
Gender				
male	90	84.90		
female	16	15.10		
Specialization				
Agricultural extension	29	27.35		
others	77	72.65		
Work location				
village	12	11.32		
district center	25	23.58		
province center	21	19.81		
governorate center	48	45.29		
Duration of employment				
6-13 year	21	19.81	**17.6**	**3.96**
14-21 year	56	52.83		
22-29 year	29	27.35		
Agricultural information resources				
Less than 13	32	30.18	**15.5**	**3.21**
14-22	59	55.66		
More than 22	15	14.16		

2. Identify the knowledge of agricultural extension agents in climate changes phenomenon.

The results showed that the highest value of knowledge of agricultural extension agents in climate changes phenomenon was (38) numeric value and the lowest value was (21) numeric value. respondents were divided into three categories according to their knowledge of agricultural extension agents in climate changes phenomenon. As it has been shown, only (23.58%) of the respondents were ranked in the low category (21-26); whereas, most respondents were placed in the medium category (27-32), which was (57.54%), and high category (33-38), which was (18.88%). This shows that knowledge of agricultural extension agents in climate changes phenomenon is medium with a tendency to low, as shown in the table (2).

Table 2: Distribution of respondents according to their knowledge of climate changes phenomenon

Knowledge level	Frequency	(%)	$\bar{x}$	S.D
Low (21- 26)	25	23.58	23.67	4.56
medum (27-32)	61	57.54	29.34	6.22
High (33-38)	20	18.88	35.87	4.47
Total	106	100		

The findings of the study agree with the findings of (Zikhali,2016), (Nwobodo and Agwu, 2015). And disagree with (Sarkar and Padaria,2015),(Ogunlade, et al,2014) (Dimelu, 2016). This result is probably due to the fact that the topic of climate changes phenomenon is relatively new to the respondents.

Table 3. Distribution of respondents according to their knowledge with items of the climate changes phenomenon

items of climate changes phenomenon	Yes	%	No	%
Prolonged droughts	80	75.47	26	24.53
Depleted of bushes and forests	66	62.26	40	37.74
Delayed onset of rains	70	66.03	36	33.97
Crop failures	54	50.94	52	49.06
Increased rainfall failures	93	87.73	13	12.27
Reduced rainfall amounts	33	31.13	73	68.87
Increased acidity	50	47.16	56	52.84
Decrease foliage	77	72.64	29	27.36
Changing in natural environment	64	60.37	42	39.63
Increase and decreased in natural water sources	88	83.01	18	16.99
Many rivers has become seasonal	49	46.22	57	53.78
High temperature levels	77	72.64	29	27.36
Increase in food shortage	27	25.47	79	74.53
Decrease in agricultural production	65	61.32	41	38.68
Changed seasons do not follow the style as before	89	83.96	17	16.03
Prolonging famines	44	41.50	62	58.50
Shortage of pasture for grazing animals	30	28.30	76	71.70
Shortage of water for human and livestock	67	63.20	39	36.80
Individuals migrate to urban for jobs	40	37.74	66	62.26

3. the personal, Socio and economic factors influencing climate change knowledge level of respondents.

Table 4 show influence of personal, Socio and economic properties of respondents on their climate change knowledge level. result showed that Educational level ($t = 3.888$; $p = 0.000$) and Gender ($t = 2.353$; $p \leq 0.022$) were the factor which significantly influence on the knowledge level. Maybe this refers to that the significant influence of Educational Level in this part the researcher is

discussed on the level of understanding of people about climate changes based on their educational level. Because different studies assured that level of education is one of the main determinant factors people's knowledge in different aspects including climate changes. This is agree with (Dimelu, 2016), (Achiando,2012), and disagree with (Maponya & Mpandeli, 2013). also The findings indicate that male were more knowledgeable in issues of climate change than their female counterparts. This agree with (Esham et al. ,2012). there was no significant relationship between the knowledge level of Agricultural extension agents and the other factor including:

age (t = -0.410; p = 0.668), Specialization (t = 8.156; p = 0.000), Work location (t = 0.938; p = 0.352), Duration of employment (t = 0.461; p = 0.646), Agricultural information resources (t = 0.461; p = 0.646).

Table 4. personal, Socio, and economic properties influencing climate change knowledge level of respondents.

Independent Factor	Unstandardized coefficients		Standardized coefficients	t	Significant
	B	Std. Error	Beta		
Educational level	0.207	0.053	-0.023	3.888	0.000*
Age	-0.020	0.047	0.035	-0.410	0.668
Gender	1.367	0.581	-0.56	2.353	0.022*
Specialization	13.093	1.605	0.275	8.156	0.000
Work location	4.385-6	0.000	0.065	0.938	0.352
Duration of employment	0.027	0.058	0.08	0.461	0.646
Agricultural information resources	0.027	0.058	0.08	0.461	0.646

P = 0.5; R = 0.586; R2 = 0.345; Adjusted R2 = 0.242.

4. Identify the implementation level of agricultural extension agents for extensional activities which related in climate changes phenomenon.

The results showed in Table 5 that the most extension activities carried out by the respondents are (The awareness of negative effects of the use excessive to irrigation water) and (The awareness of Planting drought-tolerant crops), Were their percentage (83.01%) and (83.96) Respectively.

This is agreeing with (Abd el halim, et al. 2016). The above results indicate increase in the percentage of respondents to implementation most of the extensional activities related to climate changes and this may indicate their knowledge and perception of the seriousness of these changes and the need to adapt with it and reduce their negative effects by raising awareness of farmers to they be able to adaptive with it**.**

Table 5. The implementation level of agricultural extension agents for extensional activities which related in climate changes phenomenon

Extensional activities	Implement		Not Implement	
	Frequency	%	Frequency	%
The awareness of the negative effects of pesticides on the environment	45	42.45	61	57.55
The awareness of the negative effects of chemical fertilizers on the environment	64	60.37	42	39.63
The awareness of negative effects of the use excessive to irrigation water	88	83.01	18	16.99
The awareness of Planting drought-tolerant crops	89	83.96	17	16.04
The awareness of the danger of burning farming waste	33	31.13	73	68.87
The awareness of the negative effects of the cut Excessive for trees	54	50.94	52	49.06
The awareness of the danger of burning household waste	85	80.18	21	19.82
The awareness of Planting salt -tolerant crops	64	60.37	42	39.63
The awareness of Planting crops which Resists high temperatures	53	50.00	53	50.00
The awareness of Planting crops which Increases soil fertility	67	63.20	39	36.80

CONCLUSION AND RECOMMENDATIONS

The study sought to ascertain the knowledge of agricultural extension agents to climate change and their implementation for extensional activities which related with it in Ninavah governorate. The results show that the mean age of the respondents were 20.14 years, majority 84.90% of the respondents were male. 27.35% of respondents were their Specialization in Agricultural extension. (57.54%) of the respondents were

Their knowledge of agricultural extension agents to climate change is medium. Just educational level and gender which had significantly influence.

according to previous results recommended It was The agricultural extension must prepare for the new challenges Resulting of climate change through training its staff and raising awareness programs, especially for categories which were their knowledge (medium and low) in field climate change to meet their knowledge needs revealed by the results of the study. Developing the skills of agricultural extension workers in this field and increasing their knowledge in modern methods to cope with climate changes. Even though in the study there are natural resource management practices, but still climatic related catastrophic is occurring. So, soil and water conservation practices are necessary in widely for reducing the influences of climate change and for sustainable productivity of agriculture.

REFERENCES:

Davis KE, (2009). Agriculture and climate change: An agenda for negotiation on Copenhagen. The Important Role of Extension Systems, International Food Policy Research Institute. Washington, D. C. USA, Focus 16, Brief 11.

Emmanuel. A. (2013). Extension Services Strategies in Adaptation to Climate Change in Oyo State, Nigeria. Civil and Environmental Research www.iiste.org ISSN 2224-5790. ISSN 2225-0514 (Online) Vol.3, No.7.

Esham, M., Garforth, C., mesham, (2012). Reference tools. Mitig. Adapt. Strat. Glob. Change 18 (5), 535–549.

Grace A. Achiando, 2012. Effectivness of Communication Systems and Indigenous Knowledge in Adaptation to Climate Change by Smallholder Farmers of Kilifi District, Kenya. Master thesis. p:20.

Hanan K. Abd El- Halim1; A. El. M. Abd Eldayem1 and Dina H. Emam. (2016). Agricultural Extension Agents Knowledge and Their Implemented Activities Related to The Climate Changes Phenomenon Some Governorates of Lower Egypt. J. Agric. Econom. And Social Sci., Mansoura Univ., Vol. 7(12): 1207 – 1213.

Kyomo, M. L. (1992). Importance of strong research-extension linkages in increasing livestock production in sub-Saharan Africa. In Kategile J A and Mubi S (editors). 1992. Future of livestock industries in East and southern Africa. Proceedings of a workshop held at Kadoma Ranch Hotel, Zimbabwe, 20-23 July. ILCA (International Livestock Centre for Africa) Addis Ababa, Ethiopia. 227M pp. Available at: http://www.fao.org/Wairdocs/ILRI/x5485E/x5485e06.htm.

Leeuwis, C., and Aarts, N. (2011). Rethinking communication in innovation processes: creating space for change in complex systems. Journal of Agricultural Education and Extension, 17(1), 21-36.

Maponya, P. & Mpandeli, S. (2013). The role of extension services in climate change adaptation in Limpopo province, South Africa. J. Agric Ext. Rural Dev., 5 (7):137-142.

Ministry of Environment of the Federal Republic of Nigeria (MoEFRN, 2003). Nigeria's First National Communication under the United Nations Framework Convention Nigeria. Journal of Agricultural Extension and Rural Development 3(3): 42-50.

M. U. Dimelu. (2016). Determinants of Knowledge and Attitude of Extension Professionals to Climate Change in Anambra State, Nigeria: A Multivariate Logistic Analysis. Asian Journal of Agricultural Extension, Economics & Sociology 14(4), pp: 1-16.

Nwobodo C. E.1, Agwu A. E. (2015). Knowledge level of youth farmers on climate change in Benue State of Nigeria. African Journal of Agricultural Research. Vol.10 (30), pp: 2875-2881.

Ogunlade, I., Aderinoye-Abdulwahab, S. A. And Mensah, A. O. (2014). Knowledge Levels of Extension Agents and Their Perceived Impact of Climate Change on Extension Service Provision In Ghana. Ethiopian Journal of Environmental Studies & Management 7(1), Pp 96 – 103.

Ozor N, Nnaji C. (2011). The role of extension in agricultural adaptation to climate change in Enugu state, Nigeria J. Agric Ext. And Rural Dev.3(3):42-50.

Shrotriya, G. C. and Prakash, D. (2010). Climate Change Agricultural Cooperates.IFFCO Foundation, New Delhi, India.

Sujit Sarkar and R.N.Padaria.(2015). Measuring Farmers' Awareness and Knowledge Level about Climate Change and Formulating Future Extension Strategies. Indian Res. J. Ext. Edu. 15 (1), p: 107-111.

Tripathi.A, Mishra.A.K. (2017). Knowledge and passive adaptation to climate change: An example from Indian farmers. Climate Risk Management 16 (2017) 195–207.

Ziervogel, G., Nyong, B., Osman, C., Conde, S.C. and Dowing, T. (2006). Climate variability and change: implications for household food security. Assessment of Impacts and Adaptations for Climate Change (AIACC) Working Paper No. 20, January. The AIACC Project Office.

Zikhali.Z.M. (2016). Meeting The Extension Needs of Smallholder Farmers: The Climate Information Gap in The Public Agricultural Extension and Advisory Services in Limpopo, South Africa. Master Degree. p:44.

مستوى معارف العاملين بالارشاد الزراعي بظاهرة التغيرات المناخية ومستوى تنفيذهم للأنشطة الارشادية المتعلقة بها في محافظة نينوى

طلال سعيد حميد

قسم الارشاد الزراعي ونقل التقنيات، كلية الزراعة والغابات، جامعة الموصل

المستخلص

هدفت هذه الدراسة في تحديد مستوى معارف العاملين بالارشاد الزراعي بظاهرة التغيرات المناخية. وقد كانت الأهداف المحددة لهذه الدراسة هي: التعرف على معارف العاملين بالارشاد الزراعي بظاهرة تغير المناخ، والتعرف على العلاقة الارتباطية بين مستوى معارف العاملين بالارشاد الزراعي وبعض المتغيرات، وتحديد مستوى تنفيذ العاملين بالإرشاد الزراعي للأنشطة الارشادية المتعلقة بظاهرة التغيرات المناخية. تم استخدام طريقة العينة عشوائية بسيطة في هذه الدراسة، وقد تالف مجتمع البحث من 50% (106 عامل بالارشاد الزراعي) من مجموع المبحوثين (212 عامل بالارشاد الزراعي) في محافظة نينوى. وقد تم قياس صدق اداة البحث التي تضمنت 19 فقرة للتأكد من صحتها وذلك من خلال عرضها على المختصين بقسم الارشاد الزراعي، وبناءً على عملية التقييم تم حذف 3 فقرات منها. كما تم استبعاد 20 استمارة استبيان من عينة البحث الرئيسة وذلك لغرض ايجاد الثبات الذي (بلغ معامله 0.82). تم تحليل البيانات التي تم جمعها بواسطة الاستبيان وقد استخدمت تقنيات الإحصاء المختلفة. في هذا البحث، وهي إحصائيات وصفية مثل النسب المئوية، المتوسط الحسابي والتكرارات. أظهرت النتائج أن غالبية المبحوثين كان لديهم شهادة معهد زراعي. كما كان غالبية المبحوثين من الذكور. وكان مستوى معارف العاملين بالارشاد الزراعي في ظاهرة التغيرات المناخية معتدلة تميل إلى الانخفاض. كما اظهرت نتيجة الانحدار أنه من بين العوامل التي تم دراستها كان المستوى التعليمي والجنس هما من العوامل التي تؤثر بشكل كبير على مستوى معارف العاملين بالارشاد الزراعي بظاهرة التغيرات المناخية. كما أظهرت النتائج أن معظم الأنشطة الإرشادية التي نفذها المبحوثين هي (الوعي بالآثار السلبية للاستعمال المفرط لمياه الري) و(الوعي بزراعة المحاصيل المقاومة للجفاف). ووفقا للنتائج السابقة فكانت اهم التوصيات على الإرشاد الزراعي الاستعداد للتحديات الجديدة الناتجة عن تغير المناخ من خلال تدريب موظفيه ورفع مستوى الوعي، خاصةً للفئات التي كانت معرفتهم (المتوسطة والمنخفضة) التي كشفتها نتائج الدراسة في مجال التغيرات المناخية لتلبية احتياجاتهم المعرفية.

الكلمات المفتاحية: معارف– التغيرات المناخية– العاملين بالارشاد الزراعي.