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Knowledge Levels of Agricultural Extension Workers Concerning Sustainable Agricultural Practice in Sulaimani Governorate

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Abstract

This study aimed to determine the Knowledge of Agricultural Extension Workers regarding the Sustainable Agricultural practice (SAP) in Some areas in Sulaimani Governorate, then to find the differences in the total mean of sustainable knowledge according to some variables. The questionnaire was prepared for this purpose consists of two parts, the first part included several questions related to the independent variables, while the second part included several items to identify the knowledge level of extension workers and participate in agricultural Sustainable. The research population involved agricultural extension workers who work in some of the Agricultural Extension Centers in the Sulaimani governorate, included (75) respondents representing (67.5%) of the population (111) workers, taken by a simple random sampling method. After the data was collected there were arranged and classified and analyzed through SPSS software. The results indicated that the level of Agricultural Extension Workers of Sustainable Agricultural Practice knowledge was medium tend to high, also the level of participation in activates concerning Sustainable Agricultural practice was medium tends to high, as well the desire of participation in agricultural training courses was medium tends to high. The results showed there is a significant difference in total knowledge according to (educational level, extension service). While, no significant differences according (age, gender, Job Place, professional address. The researchers recommend creating an opportunity for agricultural extension workers to participate in the field of sustainable development practically because they have good information about this field and have a positive desire for sustainability regardless of their age, gender or place of work.

Keywords: Agriculture, Sustainability, sustainable agriculture, Extension Worker, Extension Service, Sustainable Agricultural Practices (SAP).

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INTRODUCTION:

Globally, the communities are realized that the power of the agriculture sector remains relevant and the future hope and roles of the agriculture sector will always remain as an important sector to both developed and developing countries (Velten et al. 2015). The agriculture sector has been the basic source for successful economic transformation in many developed and developing countries that are on the pathway in transforming their agriculture sector (Matahir and Tuyon 2013).

The last decades have witnessed important changes in the agricultural community, consumers and society as a whole. Sustainability issues, centered on human health and the environment are broadly acknowledged as increasingly important (Parr et al., 2007). Specifically, concerns about soil degradation, water availability, food quality and security, nutrition-related diseases, animal welfare and human-induced climate change are putting the spotlight on agriculture (Panayi, 2018).

The majority of farmers in developing countries practising intensive farming have caused environmental damage. Largely, the solution to this issue lies in sustainable agriculture. Sustainable agriculture has three components; that is, being economically sound, environmentally protective, and socially acceptable. Scholars define sustainable agriculture as a knowledge-intensive system to produce foods and fibers (Tiraieyari et al. 2013).

Sustainability currently is becoming both an important concept and a practice for three main aspects. Sustainability in agriculture refers to the farmer's ability to maintain production and give benefits based on maintaining nature and the environment, accelerating social growth, stabilizing the economy and being a commercially good competitor in the fast-changing environment (Othman and Muhammad, 2011).

Since 1987, the idea of sustainable agriculture has gained prominence in the publication of the Brundtland Report, alongside the overarching concept of sustainable development. Yet, like the notion of sustainable development itself, the concept of sustainable agriculture is ambiguous in its meaning. This characteristic has led to the emergence of a great variety of different discourses, views or paradigms of sustainable agriculture and rendered the discussion and implementation of this idea extremely difficult. It also allows for exploitation of the concept by vested interests who use the notion for their purposes. In the hope of solving this problem and making the concept more tangible, there have been numerous attempts to define sustainable agriculture (Velten et al. 2015).

Recently; Sustainable Agricultural Practices (SAP) has been gaining attention within the agricultural sector, it implemented to transform agriculture into a sustainable sector and include extensive information systems, and also agricultural extension workers play a key role in helping farmers adapt programs and plays a middle role between government agencies and farmers as a source of information. (Tiraieyari et al, 2013). However, before persuading farmers to adopt the technology, extension workers must be convinced themselves about its importance (Tiraieyari et al., 2014)

Farmers can be considered as human information processing systems. Human decision-making involves two components (the farmer's characteristics. In this respect, there have been studies regarding the personal traits that influence farmers to adopt or not to adopt specific farming practices and there are person's knowledge processes regarding farming practices), (Ghosh et al., 2020). From this point of view, sustainable development is considered one of the main pillars for the development of the agricultural sector, as an economic sector that enters to formation the national income, as well as the workers in agricultural extension, are responsible for the movement of this sustainable development towards progress and prosperity, so the research problem is summarized in the following research questions:

What is the knowledge level of agricultural extension workers of sustainable agriculture?

What is the extent of extension workers participating in agricultural sustainable activities?

What is the differences in the knowledge level of sustainable agriculture according to some independent variables?

RESEARCH OBJECTIVES:

Determine the knowledge level of agricultural extension workers of sustainable agriculture.

Determine the extent of extension workers' participation in agricultural sustainable activities.

Define the differences in the knowledge level of sustainable agriculture according to some independent variables?

MATERIALS AND METHODS

-Research methodology: Descriptive approach was used to conduct this study

-Research Area: This research was conducted in the Sulaimani governorate in the Kurdistan region-Iraq which included some of the Agricultural Extension Centers in the Sulaimani governorate

-Research population and samples: The population included all agricultural extension workers who work in the agricultural department and some extension centers. They were (118) extension workers. The sample of the research included(75) respondents representing nearly (64%) of the population, taken by a simple random sampling method. Table (1) shows the distribution of respondents:

Table (1): distribution of respondents

Research Area	Population	Sample	Percentage
Sulaimani Directorate	78	49	62%
Chamchamal center	11	7	63%
Dukan center	6	4	66%
Qarahanjer center	6	4	66%
Tanjaro center	9	6	66%
Sharbazher center	8	5	62%
Total	118	75	64%

Questionnaire preparation: The questionnaire was prepared as a tool to collect the data about the subject of the research. The questionnaire consists of two parts: First part (Included several questions related to the independent variables regard to the extension workers), Second part (Identify the level of the knowledge and participation of extension workers in sustainable agricultural activates The first draft of the questionnaire was shown to a group of specialists in the fields of agricultural extension, psychology, measuring and evaluation. Depending on their views, the items were reformatted. The content validity was measured by comparing the standards with the evaluation items according to the results of related studies.

- Data collection: After the data was collected during the period (Jan. 01th – Feb. 15th, 2020), the data were arranged and classified after analyzing with SPSS software.

RESULT AND DISCUSSION:

1) Determining the level of the extension workers' knowledge of agricultural sustainability:

To determine the total degree of knowledge levels of sustainable agriculture in general the respondents were classified into three levels depending on the actual range as described in table (2). It is appearing that the (82.7%) medium tends to be high. This result is indicated the existence that the Agricultural Extension Workers have information Concerning Sustainable Agricultural practice, despite the concept of sustainable agriculture is new in the practice field, and it's important from the agricultural exten-

sion workers' point of view because it is a global subject.

Table-2: Distribution Agricultural extension workers' knowledge of Sustainable Agricultural Practice

Category	Frequency	%	Mean of knowledge
Low (21 – 27)	13	17.3	25.15
Medium (28 – 34)	42	56.0	31.45
High (35 – 41)	20	26.7	36.50
Total	75	100%	

Total mean = 31.71 S.D. = 4.17

2. To determines the extent of extension workers participate in agricultural sustainable activities:

To determine the total degree of participation inactivates Concerning Sustainable Agricultural practice, the respondents were classified into three levels depending on the range, as described in table (3). It has appeared that the total level was nearly (% 85.3) the medium tends to be high. This result supports the first aim of this research also indicates that agricultural extension workers participate in extension activities related to sustainable agriculture practice.

Table-3: Distribution of Participation inactivates Concerning Sustainable Agricultural practice.

Category	Frequency	%	Mean of total participation
Low (6 – 13)	11	14.7	32.18
Medium (14 – 21)	42	56.0	31.45
High (22 – 29)	22	29.3	31.95
Total	75	100%	

Mean =31.71 S.D. = 4.178

3) Determining the desire to participate in agricultural training courses concerning Sustainable Agricultural practice:

To determine the degree of the desire of participation in training courses concerning Sustainable Agricultural practice, the respondents were classified into three levels depending on the range, as described in table (4). It is appearing that the total level was nearly (% 82) medium tend to high. This finding indicates that agricultural extension agents are willing to participate in training courses related to sustainable agricultural practices, as training is an appropriate way to increase their level of knowledge about sustainable agricultural practices.

Table-4: Distribution of desire to participate in agricultural training courses

Category	Frequency	%	Mean of total desire
Low (31 – 50)	13	17.3	45
Medium (51- 70)	37	49.3	64.24
High (71- 90)	25	33.4	78.16
Total	75	100%	

Total mean = 65.55 S.D. = 12.45

(4) Determining the differences in knowledge of sustainable agricultural practice according to some variables:

Table -5: Differences in the knowledge of sustainable agricultural practice according to some variables.

Variable	Categories	Frequency	%	Mean of knowledge	F. test t. test	sig
Gender	Male Female	43 32	57.3 42.7	39.91 31.44	t 0.479	0.633 Non-sig.
Age/year	29 – 40 41 - 52 53–more than	39 22 14	52.0 29.3 18.7	32.05 31.32 31.43	F 0.257	0.774 Non-sig
Educational level	Agricultur-al-High school Agricultural-Di-ploma Bachelor M.Sc.	16 18 39 2	21.3 24.0 52.0 2.7	31.44 29.56 33.10 26.0	F 5.01	0.003 Sig
Service	7 -14 15 – 22 23 – 30	19 49 7	25.3 65.3 9.4	33.58 30.88 32.43	F 3.151	0.049 Sig

Speciality	Agricultural	64	85.3	31.86	t 0.761	0.449 Non-sig
	Non-Agricultural	11	14.7	30.82		
Professional address	Agricultural Supervision	18	24.0	31.28	F 1.48	**0.225** Non-sig
	Agricultural Extension Worker	18	24.0	31.67		
	Agricultural Engineering	34	45.3	32.44		
	Others	5	6.7	28.40		
Job Place	Extension department	49	65.3	31.65	t 0.152	0.884 Non-sig.
	Extension Centers	26	34.7	31.81		

To find out the differences in knowledge of sustainable agricultural practice according to some characteristics of the respondents (as independent variables), t-test and analysis of variance were used.

Gender: the results showed that most of the respondents are male (57.3%). t-test was used to find the differences in sustainable agricultural practices, the calculated t-test (0.63), is less than the table value, this means that there is no significant difference in the knowledge of sustainable agricultural practices according to gender. It may be attributed that the gender variable does not affect the knowledge of sustainable agricultural practices, and both genders have the same interests and practices of sustainability in the work and participation.

Age: Table (5) shows that the majority of respondents ((% 52) were within the age range of (29-40) years. The calculated F-value (0.257) is less than the table value. This means that there is no significant difference in the knowledge of sustainable agricultural practices according to age. It may be attributed the level of knowledge of agricultural extension workers in sustainable agriculture practices is not affected by the change of their ages, and that sustainable agriculture is a new issue, so all ages have the same level of knowledge

Educational level: It has appeared from the results that most of the respondents (52%) were belong to the bachelor's degree. F-test was used to find the differences in sustainable agricultural practices. The calculated F-test is (5.01), which is more than the table value. This means that there is a significant difference according to the educational levels. It may be attributed that the holders of the BSc certificate are the most practical groups in the field of sustainable agriculture practices if we compared with other groups, which led to increasing and improvement of their information.

Service: Depending on the results in this study, most of the respondents are within the medium category of the service duration (15–22) years. To find the differences in sustainable agricultural practices, an analysis of variance (F) was used. The calculated F-value (0.235) is less than the table value. So, there is a significant difference in sustainable agricultural practices according to the service duration of the work. It may be attributed that the job service of agricultural extension workers affects sustainable agricultural practices and the short service category are the young workers who have a greater understanding of the issue because they read and follow the topic of sustainable agriculture as a new topic.

Speciality: the results showed that most of the respondents (%85.3) were agriculture specialists. t-test was used to find the differences in sustainable agricultural practices, the calculated t-test (0.449), is less than the table value, this means that there is no significant difference in the knowledge of sustainable agricultural practices according to them especially. It may be attributed that the level of knowledge of respondents towards sustainable agricultural practice does not depend on specialization, and the reason is this field needs all agricultural and non-agricultural disciplines because it is a comprehensive subject.

Professional address: It has appeared from the results that most of the respondents (45.3%) were belong to Agricultural Engineering. F-test was used to find the differences in sustainable agricultural practices. The calculated F-test is (1.48), which is less than the table value. This means that there is no significant difference in the knowledge of sustainable agricultural practices according to the Professional address. It may be attributed that the Professional address is an administrative matter and everyone's responsibility to implement and implement sustainable agricultural practices.

Job place: Depending on the results in this study, most of the respondents are working in Agricultural Extension Department. To find the differences in sustainable agricultural practices, an analysis of variance (F) was used. The calculated F-value (0.88) is less than the table value. So, there is no significant difference in sustainable agricultural practices according to the job place. It may be attributed that the workplace does not affect the level of their knowledge, and sustainable agricultural practices are not related to a specific place but contain inside and outside the workplace.

CONCLUSION AND RECOMMENDATION

CONCLUSIONS:

The research appeared that the total knowledge level medium tends to high, we conclude that the extension workers interested in this field as their responsibility, and is a very important and modern field in the development and sustainability of the agricultural sector.

Participation inactivates concerning sustainable agricultural practice medium tend to high, we conclude that the participation in sustainable agriculture activities came as a result of their knowledge level in this field, as it appeared in the first aim that their information tends to high, this indicates that there is a positive relationship between increasing their information and increase their participation in sustainable agriculture.

The desire for participation in agricultural training courses tend to be high, we conclude that participation in sustainable agriculture activities may encourage you to participate in training courses in this field, as well as increasing their information may be a result of using training courses related to sustainable agriculture.

There are significant differences in the knowledge level of sustainable agriculture according to educational level, we conclude that holders of bachelor's degrees are responsible for implementing sustainable agriculture activities compared to the rest of the other certificates, which will increase their experience. There is a significant difference in the knowledge level of sustainable agriculture according to service duration, we conclude that the few service category may be from the young generation who are enthusiastic about work and activity

RECOMMENDATIONS:

Depending on the results, the programs of the agricultural extension department have to focus on activation projects in the sustainable agriculture field.

Coordination between agricultural extension institutions, considering sustainable agriculture a comprehensive and integrated activity that needs the participation of all concerned parties.

Depending on the results, we recommend that competent authorities coordinate with farmers to develop projects and programs in the field of sustainable agriculture.

Opening training courses or using other educational methods for agricultural extension workers to develop and increase their experiences in sustainable agriculture, considering that training leads to the expansion of their knowledge and skills.

That the Ministry of Agriculture focuses on developing the agricultural sector through sustainable agriculture, maintaining the fertility of agricultural lands, producing high-quality organic crops, and creating a clean agricultural environment.

پوختە:

ئامانج لەئەنجامدانی ئەم توێژینەوەیە دیاریکردنی زانینی کارمەندی ڕێنمایی کشتوکاڵی سەبارەت بە پراکتیزەکردنی کشتوکاڵی بەردەوام لە هەندێ ناوچەی پارێزگای سلێمانی وە دۆزینەوەی جیاوازی لە تێکڕای زانینەکان بەپێی هەندێک لە فاکتەرەکان. فۆرمێکی ڕاپرسی بۆ ئەم مەبەستە ئامادەکرا کە لە دوو بەش پێکهاتووە و بەشی یەکەم کۆمەڵێک پرسیاری پەیوەست بە فاکتەرە سەربەخۆکان، بەشی دووەم چەند بڕگەیەک لەخۆ دەگرێت بۆ دیاریکردنی ئاستی زانیاری کارمەندانی ڕێنمایی و بەشداریکردنیان لە کشتوکاڵی بەردەوام. کۆمەڵگای توێژینەوەکە پێکهاتوە لە کارمەندانی ڕێنمایی کشتوکاڵی لەپارێزگای سلێمانی کە (٧٥) کارمەندە کە وەرگیراون بە ڕێگای سامپڵی هەڕەمەکی سادە بە ڕێژەی (٦٧,٥٪) ی کۆمەڵگای توێژینەوەکە کە (١١١) کارمەند بوو. دوای ئەوەی داتاکان کۆکرانەوە و ڕێکخران و پۆلێن کران و شیکارکرا لە ڕێگەی SPSS software. ئەنجامەکان دەریخست کە ئاستی زانیاری کارمەندانی ڕێنمایی کشتوکاڵی لەسەر کشتوکاڵی بەردەوام مامناوەند بەرەو بەرز بوو، هەروەها ئاستی بەشداریکردن لەچالاکیی سەبارەت بەپراکتیزەکردنی کشتوکاڵی بەردەوام مامناوەند بەرەو بەرز بوو، هەروەها ئارەزوو لە بەشداریکردن لەخولەکانی ڕاهێنانی کشتوکاڵی بەردەوام مامناوەند بووە. ئەنجامەکان دەریانخست کە جیاوازییەکی بەرچاو هەیە لە زانینەکان لەسەر کشتوکاڵی بەردەوام بەپێی (ئاستی پەروەردەیی، خزمەتگوزاری ڕێنمایی). لە کاتێکدا، هیچ جیاوازییەک نیە بەپێی (تەمەن، جێندەر، شوێنی کار، ناونیشانی پیشەیی). پێشنیار دەکرێت دەرفەتێک بۆ کارمەندانی ڕێنمایی کشتوکاڵی دروست بکەن بۆ ئەوەی بە شێوەیەکی پراکتیکی بەشداری لە بواری گەشەپێدانی بەردەوامدا بکەن چونکە زانیارییەکی باشیان لەسەر ئەم بوارە هەیە و ئارەزووی فێربونیان هەیە سەبارەت بە بەردەوامیدان بەبێ گوێدانە تەمەن و ڕەگەز یان شوێنی کارکردنیان.

کلیلە وشە: کشتوکاڵ، بەردەوامیدان، کشتوکاڵی بەردەوام، کارمەندانی ڕێنمایی، خزمەتگوزاری ڕێنمایی، ڕاهێنانی کشتوکاڵی بەردەوام(SAP).

المستخلص:

استهدفت هذه الدراسة إلى تحديد معرفة العاملين في الإرشاد الزراعي فيما يتعلق بالممارسات الزراعية المستدامة (SAP) في محافظة السليمانية ، ثم إيجاد الفروق في المعرفة الكلية وفقًا لبعض المتغيرات. استخدمت استمارة استبيان لهذا الغرض تتكون من جزئين ، تضمن الجزء الأول عددًا من الأسئلة المتعلقة بالمتغيرات المستقلة ، بينما تضمن الجزء الثاني عددًا من الفقرات لتحديد مستوى معرفة العاملين الارشاديين والمشاركتهم في ممارسات الزراعة المستدامة. شملت مجتمع البحث المرشدين الزراعيين في قسم و بعض المراكز الإرشادية الزراعية في محافظة السليمانية ، وشملوا (٧٥) مبحوثا ويمثلون (٦٧,٥٪) من مجتمع الكلي (١١١) عاملاً ، تم أخذهم بطريقة العينة العشوائية البسيطة. بعد جمع البيانات تم ترتيبها وتصنيفها وتحليلها من خلال برنامج SPSS. أشارت النتائج إلى أن مستوى معرفة العاملين في التنمية المستدامة كانت متوسطة يميل الى الارتفاع، و مستوى المشاركة في الأنشطة الخاصة بالممارسات الزراعية المستدامة كانت متوسطة يميل إلى الارتفاع ، كما أن الرغبة في المشاركة في الدورات التدريبية الزراعية في مجال التنمية المستدامة كانت متوسطة يميل إلى الارتفاع. أظهرت النتائج وجود فروق معنوي في المعرفة الكلية حسب (المستوى التعليمي ، الخدمة الإرشادية). بينما لا توجد فروق معنوي حسب (العمر ، الجنس ، مكان العمل ، العنوان المهني). يوصي الباحثون بإيجاد فرصة للعاملين في مجال الإرشاد الزراعي للمشاركة في مجال التنمية المستدامة بطريقة عملية لأن لديهم معلومات جيدة حول هذا المجال ولديهم رغبة إيجابية في الاستدامة بغض النظر عن العمر أو الجنس أو مكان العمل.

الكلمات المفتاحية: الزراعة ، الاستدامة ، الزراعة المستدامة ، عامل الإرشاد ، خدمة الإرشاد ، الممارسات الزراعية المستدامة(SAP)

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