How to Cite:
Yousif, S. A., & Ismael, I. R. M. (2022). Cucumber growers' knowledge of the most important scientific recommendations related to its cultivation in greenhouses in Chamchamal District/ Sulaymaniyah governorate. *International Journal of Health Sciences*, *6*(S6), 5101–5114. https://doi.org/10.53730/ijhs.v6nS6.10944

Cucumber growers' knowledge of the most important scientific recommendations related to its cultivation in greenhouses in Chamchamal District /Sulaymaniyah governorate

Prof. Dr. Sahab Ayid Yousif
Tikrit University / Department of Economics and Agricultural Extension / Agricultural Extension
Email: sahabalyousif@tu.edu.iq

Ismael I. R. M.
Tikrit University / Department of Economics and Agricultural Extension / Agricultural Extension
Email: Ismael.i.rafeeq@st.edu.iq

***Abstract*---**The research aimed to identify the knowledge level of cucumber growers in greenhouses with the most important recommendations related to its cultivation in Chamchamal district / Sulaymaniyah governorate in general, and to determine the level of their knowledge of the most important scientific recommendations related to its cultivation in greenhouses in each field of agriculture, as well as to identify the relationship of knowledge level with some variables The independent sample included (144) respondents who were chosen randomly, representing (60%) of the total cucumber growers in the greenhouses in the district of Chamchamal, who numbered (240) respondents, and (4) respondents were excluded due to the non-completion of the questionnaire form by the respondents and thus The sample size became (140) farmers, (30) respondents were excluded from the initial test sample of the form. The questionnaire was used as a tool for collecting data from the respondents in the personal interview method. The form included three parts, the first part related to the personal variables of the farmers and the second part included a set of paragraphs related to measuring the level of knowledge Cucumber growers in greenhouses provided the most important scientific recommendations related to its cultivation in greenhouses Paragraphs of the type (choice from alternatives, yes first) and the third part relates to a group of problems that cucumber growers suffer from in greenhouses, and three areas were identified, namely (construction of the greenhouse, agricultural operations, harvesting and marketing operations), and the maximum degree was determined For the desired level of the researcher by (100) degrees, and to analyze the data, he used the statistical analysis program, (SPSS). The results also showed that the majority of the

respondents have an average level of knowledge that tends to decline, and when arranging the research fields according to their relative importance to the averages, the field (genie and marketing operations) came. The first place and the field of (construction of the greenhouse) ranked last. It also showed that there is a significant correlation between the knowledge level of the respondents in general and all the studied variables. And the researcher concluded that there is a weakness in the extension service provided to farmers, which is reflected in the low At the level of knowledge of cucumber growers in greenhouses in Chamchamal district, the research recommended the need to intensify extension activities and training programs for vegetable growers inside greenhouses in order to fill the deficiency in their knowledge of the importance of applying scientific recommendations to grow the crop, and that these programs be well-planned and based on needs Training for farmers who suffer from a low level of knowledge in most areas of research, and to focus on the newly acquired greenhouses.

Keyword---Cucumber, important scientific, cultivation, greenhouses.

Introduction

The global food system is facing a tremendous amount of pressure due to the increased demand for food in the coming years, as the number of the Earth's population is expected to increase during the next ten years. (Paban, 2021: 8), and the evidence indicates a rise in hunger rates in the world as a result of population increase and limited Quantity of food, as it is difficult to provide food and distribute it to each person. The issue of food security does not depend only on providing food, but also on the possibility of distributing it to the population of the earth and improving its quality (United Nations, 3:2017). Global food security is the provision of food to all members of society in the quantity and quality necessary to meet their needs on an ongoing basis for an active healthy life (Food and Agriculture Organization of the World (FAO), 2018: 23), and agriculture is the mainstay of the national economy of any country, whether it is developed or developing And it takes a lot of interests at all levels, and it is of great importance in providing food to meet the increasing need in demand as a result of the population increase resulting from improving the health and living situation of the population, as well as providing opportunities He worked for a large number of people and provided them with foodstuffs and raw materials for industries that depend on agriculture in providing the necessary raw materials.

But the increase in agricultural production and productivity in terms of quantity and quality depends primarily on the use of advanced agricultural technologies in agriculture, and although Iraq is an agricultural country, it imports food and agricultural products from neighboring countries and other countries (Hassan, 2013: 2). The countryside depends on agriculture by about 45% of the population, and agricultural products, including vegetable crops, are among the most important pillars of the agricultural economy. (Ali, 2016:3), and it has become necessary to encourage farmers to use modern agricultural technologies and follow the scientific recommendations related to agriculture, because the main objective of using modern technology is to increase production and reduce its costs. Through making changes in the methods and means of production used by introducing new production methods such as agricultural mechanization, chemical fertilizers, genetic engineering in agriculture, the use of hybrid varieties of seeds, the use of modern irrigation systems, agricultural rotations, modification of planting dates and other

modern practices (Al-Halafi, 2014: 2), The blame lies a lot on the weak effectiveness of agricultural research or the weak communication between each of the research centers and between extension and agricultural extension agents (Adesoji: 2012, 25), in the delivery of modern agricultural techniques to farmers, responsible for providing agricultural technologies to farmers, and the work of agricultural extension is to build the capacities of farmers and educate them How to use modern agricultural techniques and use them in the right way and provide services to farmers to improve their living and economic standards (Meenaetal: 2017, 1).

Agriculture in greenhouses is one of the modern and important types of agricultural activities and is a source of income for thousands of farmers, as well as providing agricultural crops during non-planting times (Al-Nuaimi , 2017 : 23), because farming inside greenhouses provides me with A suitable environment for the growth and production of agricultural crops throughout the year as well as increasing their production compared to the production of open cultivation (Abushima, 45: 2010), and it provides a better opportunity for farmers to obtain more material income than open cultivation (Al-Ta'i, 2017: 31). Cucumber is grown in greenhouses, as cucumber is one of the most important foods for humans in terms of health, because it contains (vitamins, minerals, proteins, fats, and other compounds). (Bassam, 2011: 18) Cucumber is considered one of the most widely consumed and spread crops locally and globally. Therefore, it has attracted attention and is widely cultivated in greenhouses, especially in the northern regions of Iraq (Abdul-Fattah, 321: 2018), and cucumber is an annual herbaceous plant that belongs to the cucurbit family, Cucumbers are consumed in the form of fresh or pickled fruits, and are used in the manufacture of cosmetics. (Al-Bakhti, 2018: 20)

However, the cultivation of the cucumber crop still suffers in Iraq, including the Kurdistan Region, from some problems, which negatively affected the productivity of the crop. (Al-Saadi and Al-Badri, 2010: 9-10) indicated that the reason for the fluctuation and decrease in the production of the cucumber crop in greenhouses is due to several factors, including the lack of sufficient knowledge of vegetable growers with modern agricultural technologies used in greenhouses and the lack of sufficient knowledge to prepare the soil at home Plastic for agriculture, planting seeds, raising and pruning the appropriate plant, combating various diseases and pests, whether fungal or insects and others, using chemical fertilizers well and not distinguishing between lack of elements and various diseases of the plant as a result of not delivering scientific agricultural recommendations used in agriculture inside greenhouses in particular and recommendations related to cultivation and service Vegetable crops, starting from the process of preparing the soil to marketing, according to what was found (Ali, 2012:32), the level of knowledge of vegetable growers, including cucumber, is medium and tends to decline.

And (Al-Ajili and Sazan, 2014: 299) found, in their study of the training needs of cucumber growers in greenhouses in Erbil governorate, that the largest proportion of the respondents fall within the category of great training need. He attributed the reason for this to the weakness of the extension services directed to them or the lack of use of modern technologies in agriculture. Hence the idea of the research came to study the level of knowledge of cucumber growers with the most important scientific recommendations for its cultivation in greenhouses in the Chamchamal area, which can be identified by asking the following research questions:

- What is the level of knowledge of cucumber growers about the most important scientific recommendations for its cultivation in greenhouses in the Chamchamal area?
- What is the relationship between the level of knowledge of cucumber growers with the most important scientific recommendations for its cultivation in agricultural greenhouses and each of the following independent variables (age, educational level, number of years of experience in cultivation under greenhouses planted with cucumbers, sources of information, trend towards growing cucumbers in greenhouses)

Research Objectives

- Determining the level of knowledge of cucumber growers of the most important scientific recommendations related to its cultivation in greenhouses in Chamchamal district / Sulaymaniyah governorate.
- Determining the level of knowledge of cucumber growers in greenhouses in Chamchamal district / Sulaymaniyah governorate in each of the areas of crop cultivation represented by (construction of the greenhouse, agricultural operations, harvesting and marketing operations).
- 3 Determining the correlation between the level of knowledge of cucumber growers in Chamchamal district / Sulaymaniyah governorate. And each of the independent variables (age, educational level, number of years of experience in cultivation under greenhouses planted with cucumbers, sources of information, trend towards growing cucumbers in greenhouses)?.

Materials and methods of work

Research Population and sample: In light of the statistics obtained from the Planning Department of the Chamchamal Agriculture Directorate - Sulaymaniyah Governorate, the Chamchamal district and its sub-districts were chosen as the area to conduct the research, and the sample was chosen by random sampling method with a percentage (60%) of the total number of (240) greenhouse farmers In the district, the sample size was (144) farmers, and (4) forms were excluded due to their incompleteness by the farmers, and thus the sample size became (140) farmers.

Information and data collection

The research data was collected by means of a questionnaire, through a personal interview. The questionnaire consisted of three parts:

The first part: And the independent factors included (age, educational level, number of years of experience in cultivation under greenhouses planted with cucumbers, sources of information, trend towards growing cucumbers in greenhouses)?. Measuring independent variables:

- Age:- The age of the respondent was measured in number of years until the date of data collection.
- Educational level:- The educational level was measured according to the following levels: (illiterate, read and write, primary graduate, intermediate graduate,

preparatory graduate, institute graduate, college graduate, higher certificate), and she was given numerical values of (1,2,3,4,5,6,7,8) respectively.

- Number of years of experience in cultivating cucumbers under greenhouses planted with cucumbers:- The number of years spent by the respondent in cultivating cucumbers inside greenhouses was measured and divided into three categories.
- Sources of information :- It was measured with (13) items to know the sources of information using the scale (always, sometimes, I don't get) and the following numerical values were given to them respectively (1, 2, 3) and divided into three categories.
- The attitude towards cultivating cucumbers in greenhouses :- and it was measured through (8) paragraphs, of which (4) are positive, and (4) are negative, before which the following alternatives (agree, neutral, disagree) were placed.

It has the numerical values (3, 2, 1) respectively for the positive paragraphs, and the values of (1, 2, 3) for the negative paragraphs, respectively, and thus the theoretical range reached between (8-24) degrees.

Part Two: A set of paragraphs related to measuring the level of knowledge of cucumber growers inside greenhouses included the most important scientific recommendations related to its cultivation in greenhouses, which numbered (48) paragraphs, and the paragraphs were of the type (choice from alternatives, yes or no), and the third part relates to a group of problems that Cucumber growers suffer from it in greenhouses. Three areas were identified, namely (construction of the greenhouse, agricultural operations, harvesting and marketing operations) and the number of paragraphs for each field reached (8,31,9) respectively, and the maximum degree of the desired level of The researcher accepted with (100) degrees, and the degree of the scale was distributed over the domains. After preparing the form in its initial form and for the purpose of verifying its validity, the researcher presented it to a number of professors specialized in agricultural extension to identify the extent to which the model achieved the objectives for which it was prepared. Preparing a preliminary image of the research questionnaire form, in order to ensure that the characteristics of the community match the sample, and it appeared that it needed to add, delete, modify and formulate a number of knowledge until the form reached its final form. The data collection was started from the owners of greenhouses during the months (December-January) (2021-2022) and for statistical analysis of the data, (percentages, arithmetic mean, standard deviation, simple correlation coefficient (Pearson), t-test were used. ..etc), and I used the SPSS program (Alphons de Vocht2009).

It included a set of paragraphs related to measuring the level of knowledge of cucumber growers inside greenhouses with the most important scientific recommendations related to its cultivation in greenhouses. The paragraphs were of the type (choice from alternatives, and yes or no). And the third part relates to a set of problems faced by cucumber growers in greenhouses. Three areas were identified, namely (construction of the greenhouse, agricultural operations, harvesting and marketing operations). The maximum degree of the desired level was determined by the researcher by (100) degrees, and the degree of the scale was distributed over the domains. After preparing the form in its initial form and for the purpose of verifying its validity, the researcher presented it to a number of professors specialized in agricultural extension to identify the extent to which the model achieved the objectives for which it was prepared. Preparing a preliminary image of the research questionnaire form, in order to ensure that the characteristics of the community match the sample, and it appeared that it needed to add, delete, modify and formulate a number of

knowledge until the form reached its final form. The data collection was started from the owners of greenhouses during the months (December-January) (2021-2022) and for statistical analysis of the data, (percentages, arithmetic mean, standard deviation, simple correlation coefficient (Pearson), t-test were used. ..etc), and I used the SPSS program (Alphons de Vocht2009).

Results and Discussion

The first objective: Determine the level of knowledge of the cucumber crop growers of the most important scientific recommendations related to Cultivated in greenhouses in the district of Chamchamal in general.

The results of the research showed that the respondents' knowledge degrees in general ranged from (31.15) to (89.70) degrees, with an average of (55.91), and a standard deviation of (15.66), on a degree scale from (zero) to (100) degrees. The respondents were divided into three categories using the law of range, and it appeared. The highest percentage falls within the middle category, as shown in Table (1).

Table 1
Distribution of respondents according to the categories of knowledge level degrees for the most important scientific recommendations related to agriculture Cucumber in greenhouses

Category	the number	Percentage	Knowledge level rate
Low(31.15-50.66)	49	35	39.78
Average(50.67-70.18)	57	40.7	56.39
High(70.19and more)	34	24.3	78.34
the total	140	100%	S.D=15.66

Table (1) shows that the largest percentage, 40.7% of the respondents, fall within the medium category, followed by 35% in the low category. This means that the level of knowledge of cucumber growers of scientific recommendations related to its cultivation in greenhouses is medium and tends to decrease, and this may be caused by the use of methods by farmers. In the traditional agriculture in greenhouses as well as in their open fields, the services and extension training provided by extension departments in Sulaymaniyah governorate were reduced or weak.

The second objective: Determine the level of knowledge of cucumber growers in the greenhouses in each From magazines of crop cultivation, represented by b.

- **Creating the greenhouse:** The results of the research showed that the highest score obtained by the respondents in this field is (16.75) degrees and the lowest is (2) degrees, with an average of (9.36) degrees out of (18.75).degree, standard deviation (3.52).
- **Agricultural operations:** The results of the research showed that the highest score obtained by the respondents in this field is (62.58) degrees and the lowest is (12.30) degrees, with an average of (36.42) degrees out of (64.58).degree, and standard deviation (11.42).

- **Genie and Marketing Operations:** The results of the research showed that the highest score obtained by the respondents in this field is (16.67) degrees, and the lowest degree is (2) degrees, with an average of (10.13) degrees out of (16.67) degrees, and a standard deviation of (3.51) As shown in the following table: Table No. (2)

Table 2
Distribution of respondents according to their level of knowledge in each field of cucumber cultivation in greenhouses

Fields	Category	Frequency	percentage	Knowledge level rate
Create a plastic house	Low(2-6.92)	39	27.9	18.75
	Average6.93-11.85	73	52.1	8.85
	High11.86 and more)	28	20	13.78
the total		140	100	
agricultural operations	Low(12.3-29.06	37	26.4	18.72
	Average(29.07-45.83)	91	65	32.4
	High(45.84 and more)	12	8.9	52.03
the total		140	100	
Genie and Marketing Operations	Low(2-6.89)	15	10.7	3.6
	Average(6.9-11.79)	64	45.7	8.6
	High(11.8 and more)	61	43.6	13.35
the total		140	100	

It is evident from Table No. (2) that the level of cucumber growers' application of scientific recommendations in the fields of greenhouse construction and agricultural operations was average, tending to decrease, while it was medium tending to rise in the field of harvesting and marketing operations. The reason for this may be a defect in the guidance services provided to them. For the purpose of comparing the fields of cucumber cultivation in greenhouses, the weighted average was calculated for each of the fields in order to know which of the fields related to the cultivation of the cucumber crop got a higher level of knowledge by the respondents, and by giving the estimated weights to the categories of the knowledge level.

Table 3
Calculation of the weighted average for each of the fields and the relative importance of the averages

Fields	Knowledge level rate	Average arithmetic	The relative importance of the mean	Rank
Create a plastic house	18.75	9.36	49.9	3

agricultural operations	64.58	36.42	56.4	2
Genie and Marketing Operations	16.67	10.13	60.8	1

It is evident from Table (3) that the field of harvesting and marketing operations ranked first in terms of importance, with an importance rate of (60.8) degrees. The field (construction of the greenhouse) ranked last, with a rate of (49.9) degrees, and this may be due to the fact that the farmers did not receive training in how to establish the greenhouse, and that many farmers use people with experience in the installation and installation of the greenhouse, which led to the feeling that the construction of the greenhouse The plastic house is not one of the jobs required of them.

The third objective: Determine the correlation between the level of knowledge of cucumber growers in Chamchamal district / Sulaymaniyah governorate in general. Each of the following independent variables:

Age

The results of the research showed that the ages of the respondents ranged from (17) to (65) years, with a mean of (38) years, and with a standard deviation of (1.2), and they were divided into five categories as shown in Table (4).

Table 4
Distribution of cucumber growers according to age groups and their relationship to the level of knowledge

age categories	Frequency	percentage	Knowledge level rate	Correlation coefficient	a test T
17-26	25	17.9%	44.23	0.380	4.82
27-36	38	27%	50.38		
37-46	40	28.6%	60.92		
47-56	25	17.9%	67.14		
57 and more	12	8.6%	55.07		
the total	140	100%			S.D=1.2

Table No. (4) shows that the highest percentage of respondents is in the third age categories (37-46) with a rate of (28.6%), and the lowest is in the fifth age group (57 and over) at a rate of (8.6%). In order to find out whether there is a significant correlation between the cognitive level of cucumber growers for the most important scientific recommendations related to its cultivation in greenhouses and age, the simple correlation coefficient (Pearson) was used, whose value was (0.368). This indicates the existence of a significant correlation between the two variables. To ensure the significance of the relationship, the calculated (t) test was used, which had a value of (4.82), and compared it with the tabular (t) which was (2.33), meaning that it is significant at the level (0.01). Thus, we reject the statistical hypothesis, which claims that there is no significant correlation between the level of knowledge of the cucumber crop growers and age, and accept the alternative hypothesis, which means that the greater the age of the farmers, the greater the

level of knowledge for them, and they were more experienced as a result of the accumulation of agricultural work for several years This result is in agreement with what was reached by (Karim 2013) and does not agree with both (Kalhouri and Al-Mufti 2015) and (Kalhouri 2009).

Educational level

The respondents were distributed according to educational levels into eight categories according to their educational levels, and it was found that the highest percentage are from middle school graduates with a rate of (26.4%) and with an average knowledge of (50.04) degrees, then came primary school graduates, then read and write. With the same percentage, both the preparatory school graduates, the institute graduate, then my mother, then the college graduate, and the lowest percentage of the respondents falls within the category of Educational level (higher degree) at a rate of (0.7%) and with an average knowledge level of (89.57).

Table 5
Distribution of the respondents according to the categories of educational level and its relationship to the level of knowledge

Education Level Categories	the number	percentage	Knowledge level rate	Correlation coefficient	a test T
Illiterate	10	7.1%	46.72	0.565**	8.05
Reads and writes	18	12.9%	48.77		
Elementary graduate	31	22.1%	49.08		
a middle school graduated	37	26.4%	50.04		
Prep graduate	17	12.2%	62.78		
Institute graduate	17	12.2%	73.45		
college graduate	9	6.4%	78.19		
Master's Degree	1	0.7%	89.57		
the total	140	100%			

In order to find out whether there is a correlation between the level of knowledge and the educational level, the ordinal correlation coefficient (Spear man-Brown) was used, which amounted to (0.565) degrees, and this indicates the existence of a positive direct relationship between the two variables, and to ensure the morale, the calculated (t) test was compared. And whose value amounted to (8.5), with a tabular (t) value of (2.33), it was significant at the probability level (0.01), and thus we reject the statistical hypothesis which states that there is no significant correlation between the level of knowledge of the cucumber crop grower and the educational level. We accept the alternative hypothesis, and this may be due to the fact that the respondents with higher educational levels are more aware and seek to obtain knowledge, skills and experiences that increase their knowledge in the field of cucumber crop cultivation in greenhouses, its use and application. This result agrees with the findings of (Kalhori 2009) and does not agree with (Karim 2013) and (Kalhori 2015).

Experience in Cultivation of Cucumber in Greenhouses

The results of the research showed that the least number of years of experience possessed by the respondents in the field of Cucumber Cultivation in Greenhouses is (1) year, and the maximum is (12) years, with an average of (4.5) years. The variable is divided into three categories, as shown in Table (6).

Table 6
Distribution of respondents according to the categories of experience in cultivating the crop

Experience classes in cucumber cultivation in greenhouses	the number	Percentage	Knowledge level rate	Correlation coefficient	a test T
(1-4) year	71	50.7%	48.79	0.406*	5.23
(5-8) year	55	39.3%	63.54		
(9-12) year	14	10%	62.03		
the total	140	100%			S.D=2.61

Table No. (6) shows that the highest percentage of respondents' experience falls within the first category (1-4 years) and their percentage is (50.7) and the lowest percentage falls within the third category (9-12) years and their percentage is (10%). To find out if there is a relationship Significantly between the two variables, the simplified correlation coefficient (Preason) was used, which reached a value of (0.407) degrees, and this indicates the existence of a significant relationship between the two variables. Significant at the probability level (0.01), and thus we reject the statistical hypothesis and accept the alternative hypothesis, and this means that the knowledge level of the cucumber crop growers in greenhouses increases with the increase in the number of years the farmer has worked in agriculture and they have a store of information as a result of many experiments This result is consistent with the study (Karim 2013).

Sources of information

The results of the research showed that the scores obtained by the respondents ranged from (17) to (34), with an average of (25), and this variable was distributed into three categories, as shown in Table (7).

Table 7
Distribution of cucumber growers according to the variables of information sources and their relationship to the level of knowledge

Categories of information sources	the number	Percentage	Knowledge level rate	Correlation coefficient	a test T
Low(17-22)	42	30%	49.79	0.295	3.63
Average(23-28)	73	52.1%	56.93		
High(29-34)	25	17.9%	63.2		
the total	140	100%			S.D=3.96

Table No. (7) shows that the highest percentage of respondents who obtained information sources is in the medium category with a rate of (52.1%) and an average knowledge level of

(56.93) degrees, and the lowest percentage within the high category of (17.9) and an average knowledge level of (63.20) degrees. In order to find out whether there is a correlation between the level of knowledge and the number of years of experience, the simple correlation coefficient (Pearson) was used, which reached a value of (0.295) degrees, and this indicates the existence of a significant relationship between the two variables. Its value is (3.63) and the tabular (t) value of (2.33) was significant at the probability level (0.01) and thus we reject the statistical hypothesis and accept the alternative hypothesis. This result is consistent with the findings of (Kalhouri 2015) and does not agree with the study (Karim 2013).

The attitude towards cultivating cucumbers in the greenhouse

The results of the research showed that the scores obtained by the respondents ranged from (10) to (20) degrees, with an average of (16) degrees, and this variable was distributed into three categories using the theoretical range as follows .

Table 8
Distribution of cucumber growers according to the trend variable towards cultivating cucumbers in the greenhouse and its relationship to the level of knowledge

Categories of attitude towards cucumber cultivation	the number	percentage	Knowledge level rate	Correlation coefficient	a test T
Negative(10-13)	19	13.6%	47.84	0.425	5.52
Neutral(14-17)	77	55%	52.1		
Positive(18 and more)	44	31.4%	66.06		
the total	140	100%			S.D=2.15

In order to find the correlation between the level of knowledge and the variable of the farmers' attitudes towards the cultivation of the cucumber crop in the greenhouses, the correlation coefficient (Pearson) was used, which reached a value of (0.425) degrees, and this indicates the existence of a direct relationship between the two variables, and to ensure the significance of the relationship, the (t) test was compared. The calculated value was (5.52) and the tabular (t) value was (2.36), and the result was a significant correlation between the two variables at the level (0.01), and thus we reject the statistical hypothesis and accept the alternative hypothesis. This may be attributed to the higher the degree of farmers' attitudes towards cultivating the cucumber crop in greenhouses, the greater their knowledge in the field of cultivation in greenhouses, and thus their desire to search for new information increases.

Conclusions

- The results of the research show that the level of knowledge of the farmers of the cucumber crop with the most important scientific recommendations related to its cultivation in greenhouses is average, which tends to decrease, which indicates that the level of knowledge of the farmers in performing their agricultural work, and specifically the scientific recommendations related to the cultivation of the cucumber crop in greenhouses, is not It is still substandard and needs more support.

- The level of knowledge of cucumber growers in greenhouses for each of the two areas (greenhouse construction, agricultural operations) was average, tending to decline, and accordingly we conclude that there is a shortage of farmers' knowledge in these two areas.
- The personal characteristics that were studied on (age, educational level, number of years of experience in cultivation under greenhouses planted with cucumbers, sources of information, trend towards cultivation of cucumbers in greenhouses)? All of them have a positive significant correlation with the level of the farmers' knowledge. We conclude that these characteristics are among the factors that contribute to raising the level of knowledge of the cucumber crop growers in the greenhouses, which requires taking them into consideration when developing the guidance and training plans for the farmers.

Recommendations

- In order to avoid the deterioration in the level of knowledge of cucumber growers, the most important scientific recommendations related to its cultivation in greenhouses and to fill the shortage of agricultural information and knowledge. It requires the Directorate of Agriculture of Chamchamal District and the Agricultural Extension Division in the district to plan training programs based on knowledge needs, intensify extension activities based on the planned programs to bridge the knowledge gap related to what is required to grow cucumbers in greenhouses.
- Providing access to knowledge from many agricultural, extension and educational sources. With the need for coordination and cooperation with colleges, institutes and agricultural research stations. Continuous review of the latest developments in the field of agricultural extension and agricultural research.
- Benefiting from the methodology adopted by this research as one of the reliable methods in determining the level of knowledge of farmers in other agricultural fields.

References

Adesoji, S. A and Aratunde, T. (2012). Evaluation of the linkage system of research-extension farmers in Oyo State, Nigeria: Lesson for agricultural extension administrators. Journal of Agricultural Extension and Rural Development. 4(20): 561-568

Abdel-Fattah, Mohamed Osman, (2018), The Egyptian Journal of Agricultural Economics - Volume Twenty-eight - Issue One - March, analysis of the feasibility study of cucumber cultivation in greenhouses.

Abushima, Nader Salah, (2010), Human Resources Management, 4th floor, Dar Al-Safa Publishing and Distribution, Egypt.

Al-Ajili, Sahab Ayed, and Sazan Abdullah Karim, (2014), the level of training needs for cucumber growers in greenhouses in Erbil Governorate, Tikrit University Journal of Agricultural Sciences, special issue of the proceedings of the Sixth Scientific Conference for Agricultural Sciences, March 28-29, 2017.

Al-Bakhti, Hussein Issa Khalaf, (2018), the level of application of cucumber growers to agricultural technologies that maintain soil fertility in the district of Kut, Wasit Governorate, Master's thesis, College of Agriculture, Tikrit University.

Al-Halfi, Diaa Abdel-Hussain Nasser, (2014), The spread of some modern technologies in the cultivation of sweet potato in the areas of Yusufiya and Radwaniyah, Baghdad

governorate, unpublished higher diploma thesis, Zara College of Agriculture, University of Baghdad.

Ali, Hosni Samir, (2016), The role of agricultural policy in achieving food security: a case study of the Directorate of Agricultural Interests in the Wilayat of Biskra, published master's thesis, University of Biskra, Faculty of Law and Political Science

Ali, Majed Khalil, (2012), The level of knowledge of vegetable growers in greenhouses with the recommendations of foliar fertilization in Baladrooz district, Diyala governorate and its relationship to some factors, Journal of Tikrit University for Agricultural Sciences, Iraq, Volume (12), Number (4).

Al-Naimi, Ahmed Muhyi Al-Din Qasim, (2017), the level of knowledge of protected vegetable growers of some fields of organic agriculture in Wasit Governorate and its relationship to some variables, Master's thesis, Department of Agricultural Extension, College of Agriculture, University of Baghdad.

Alphons de Vocht (2009): "Basishandbook SPSS18 , Paperback,Nederland K.Abak, 2008, Protected cultivation in Turkey, Department of Horticulture, Faculty of Agricultural, University of Cukurova, Turkey.

Al-Saadi, Haider Abbas Abdullah, Ashwaq Abdul-Razzaq Al-Badri. (2010), the communication skills of agricultural extension workers in the field of cultivating vegetable crops in some governorates of the central region and their relationship to some factors, Journal of the Media Researcher, issue (9-10).

Al-Taie, Hussein Khudair, (2017), the system of disseminating agricultural developments and factors related to its effectiveness and efficiency, workshop article, Department of Agricultural Extension and Technology Transfer, College of Agriculture, University of Baghdad.

Baban, Salah Hassan (2021). The Challenge of Overpopulation, Al-Araby Al-Jadeed Press, Baghdad .

Bassam, Abu Turabi, (2011), Vegetable Crops Production, the Practical Part, University of Damascus, Syria

Hassan, Walid Sabbar Ayed, (2013), Obstacles to the transfer of agricultural technologies from the point of view of agricultural employees working in agricultural extension and teachers of the Faculty of Agriculture, Tikrit University, a master's thesis, Faculty of Agriculture, Tikrit University

Kalhouri, Dara Abdul Rahman Saleh, (2009), The level of knowledge of agricultural extension workers on agricultural processes for the main field crops and vegetables in the Sulaymaniyah Governorate and its relationship to some variables, unpublished master's thesis, College of Agriculture, University of Sulaymaniyah.

Kalhouri, Dara Abd al-Rahman Saleh and Nihad Khalid Muhammad Saeed al-Mufti, (2015), the knowledge level of greenhouse farmers with agricultural guidance recommendations for cucumber crop in Sulaymaniyah Governorate and related factors, published doctoral thesis, Department of Agricultural Extension, College of Agriculture, University of Sulaymaniyah.

Karim, Sazan Abdullah, (2013), Training needs of cucumber growers in greenhouses in Erbil Governorate, published diploma thesis, College of Agriculture, University of Erbil.

Meena, M.S; Kale, R.B; Singh, S.K (2017). Effectiveness of Farmer to Farmer (F2F) Extension Model to enhance the technology uptake in Rajasthan state, Technical Bulletin, 1/2017,published by ICAR-Agricultural Technology Application Research Institute, Jodhpur, India:12-1

Suryasa, I. W., Rodríguez-Gámez, M., & Koldoris, T. (2021). The COVID-19 pandemic. *International Journal of Health Sciences*, *5*(2), vi-ix. https://doi.org/10.53730/ijhs.v5n2.2937

United Nations, (2017), Economic and Social Council, Committee on Science and Technology for Development, Twentieth Session, The role of science, technology and innovation in ensuring food security by 2030, Geneva, May 8-12.

World Food and Agriculture Organization (FAO), (2018), The State of Food Security and Nutrition in the World, Building resilience to climate change for food security and nutrition, Rome.

Yanti, R., Sinrang, A. W., & Aminuddin, A. (2021). Levels of c-reactive protein (CRP) in stunting and non stunting tolls age 36-60 months. International Journal of Health & Medical Sciences, 4(1), 150-154. https://doi.org/10.31295/ijhms.v4n1.1667