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**knowledge of eggplant growers of the most important scientific  
recommendations for growing it in greenhouses and its  
relationship to some variables in Zaliya village / Samarra distric  
ABSTRACT**

The research aimed to identify the level of knowledge of eggplant farmers with the most important scientific recommendations for growing it in greenhouses in the Zaliya village of Samarra distric and its relationship to some variables. The research population included all eggplant growers in Zalaya village which number (133) farmers, a random sample of (75%) was selected, bringing the number of farmers to (100) respondents. The data were collected by the personal interview method using a questionnaire form specially prepared for this purpose. consisting of two parts. A part is concerned with the independent factors for the respondents and a second part is related to the dependent factors The paragraphs in this part were of the type (choice of alternatives.). The first field: Establishing a greenhouse includes (12) paragraphs. The second field agricultural operations / soil service includes (10) field paragraphs. The third agricultural operations / crop service includes (21) paragraphs. The fourth field includes marketing operations (7) paragraphs. After verification of the face and content validity of the measuring tool. and presented to the specialists, the reliability was calculated using the Alpha Cronbach method. And used in displaying and analyzing the data: Percentage, arithmetic mean, simple correlation coefficient (Pearson), correlation coefficient (Spearman), and t-test to analyze research data using statistical analysis program Spss. The most important result of the research came as follows:

- 61% of the respondents had their level of knowledge within the intermediate category, with an average of (30.6) degrees, and this means that most of the respondents had a lack of knowledge of eggplant farmers with the most important scientific recommendations for growing it in greenhouses.
- There is a correlation between the knowledge level of eggplant farmers and the most important scientific recommendations related to cultivating eggplant in greenhouses and each of: age, educational level, and land tenure.

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#### Introduction and research problem

Economic development is an important goal for all human societies in order to achieve the well-being of all their members since the agricultural sector is a basic pillar in the national income of most of these societies, agricultural development is an important component of the economic process (Al-Jubouri 2009: 488). Accordingly, there are many reasons that make agricultural development a vital matter for any community, so the degree of importance of each of these reasons varies according to the community's conditions and needs. The number of population, the rate of population increase, the extent to which the current agriculture meets the needs of society, the

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extent of development in the standard of living, and international conditions that affect the determination of the importance of self-reliance or the extent of the possibility of dependence on others in providing food needs. All of these factors are important and influential in one way or another in determining the degree of community interest in agricultural development (Abd al-Salam, 2012: 10). Accordingly, this importance doubles in many societies of developing countries, including Iraq, whose agricultural sector is the main pillar of their national economy (Al-Awsy, 2008: 344). A large proportion of natural and human resources are concentrated in rural areas. Therefore, achieving economic and social development requires directing efforts to develop and develop the countryside and enhance the contributions of the agricultural sector to the life of the rural community (Al-Rimawi, 1996: 13). The agricultural sector in Iraq is one of the main productive sectors, due to its abundance of natural resources (Arab Organization for Agricultural Development, 1997: 12). Which contributes significantly to building the Iraqi national economy because it provides food and job opportunities for the population, as about 45% of the rural population depends on it, and about 20% of the workforce is employed in it, and the group of agricultural products, including vegetable crops, is one of the most important pillars and components of that economy (Abboud, 2003: 1). Agricultural production is the field of producing agricultural goods necessary for the livelihood of the population, and scientific expectations for the development of this field from the fields of national production in particular require a comprehensive knowledge of the specificity of this production and its stages of development and familiarity with all its different aspects (Al-Aref, 2010: 74) especially since the world today is witnessing scientific progress in the agricultural field, so it has become necessary to encourage farmers to use modern technologies and scientific recommendations related to agriculture. Especially since the main goal of using modern agricultural technology is to work to increase production and reduce production costs for its unit, This is through the adoption of procedures that ensure changes and alterations in the means and methods of agricultural production used and resulting from the introduction of new production methods such as modern agricultural mechanization, the introduction of chemistry and genetic engineering in agriculture, the use of new varieties, the amendment of planting dates, agricultural cycles, the use of advanced irrigation systems and other Modern practices (Al-Tanoubi, 2001: 40) among the modern practices is the application of protected farming systems in vegetable production. Protected agriculture is an important agricultural and economic activity in many countries of the world, including Iraq, in which the proportion of the area of this type of agriculture increased at the end of the last century compared to what it was in the seventies. Among the modern practices is the application of protected agriculture systems in vegetable production. (Arab Organization for Agricultural Development, 1999: 98). Protected agriculture of vegetables means ((producing them in special facilities called The greenhouses for the purpose of protecting them from unsuitable weather conditions in other than their usual seasons)) and the vegetables within these greenhouses have environmental conditions that suit them in terms of temperature, the intensity of lighting, and ideal nutrition (Al-Sayed, 2006: 237). The production of vegetables under this method of agriculture greatly exceeds their productivity within the open cultivation method and thus it is a better opportunity for farmers to obtain a higher income compared to open cultivation (Wady, 2006: 3). Accordingly, protected agriculture in Iraq witnessed an expansion in the cultivated area in the last century, as the percentage of this type of cultivation was 4% of the total cultivated area in 1970 and became 6% in the 1980s. (Al-Samarrai, 2000: 1) And it reached 16% at the end of the 1990s (Arab Organization for Agricultural Development, 1997: 98). This is with regard to areas in Iraq in general. As for the area of specialization and the research area, the latest statistics of the Samarra Agriculture Division indicate that the number of greenhouses in the district is estimated at (700) greenhouses managed and employed by (239) farmers. In spite of the large areas cultivated with this pattern, it is noticed that there is a decrease in production as agricultural statistics indicate a decrease in vegetable production from 116.29 to 114.93 thousand Tons/Acres during the years 2003-2007. and the vegetables within these greenhouses have environmental conditions that suit them in terms of temperature, the intensity of lighting, and ideal nutrition (Al-Sayed, 2006: 237).

The production of vegetables under this method of agriculture greatly exceeds their productivity within the open cultivation method and thus it is a better opportunity for farmers to obtain a higher income compared to open cultivation (Wady, 2006: 3). Accordingly, protected agriculture in Iraq witnessed an expansion in the cultivated area in the last century, as the percentage of this type of cultivation was 4% of the total cultivated area in 1970 and became 6% in the 1980s. (Al-Samarrai, 2000: 1) And it reached 16% at the end of the 1990s (Arab Organization for Agricultural Development, 1997: 98). This is with regard to areas in Iraq in general. As for the area of specialization and the research area, the latest statistics of the Samarra Agriculture Division indicate that the number of greenhouses in the district is estimated at (700) greenhouses managed and employed by (239) farmers. In spite of the large areas cultivated with this pattern, it is noticed that there is a decrease in production as agricultural statistics indicate a decrease in vegetable production from 116.29 to 114.93 thousand Tons/Acres during the years 2003-2007., which is the main and important in the production process. Since the greenhouse technology is a modern technology entering the country, what the farmer possesses of cumulative experiences as a result of the little practice is weak according to the number of years of work of the farmers in the field of protected agriculture. Therefore, it is important to stand at the level of knowledge of greenhouse farmers. It is the responsibility of the agricultural extension agencies to deliver and transmit the results of research, and the methods, ideas, and modern agricultural methods involved to farmers, and to follow up their implementation of them, which leads to higher productivity and consequently increased incomes and higher economic and social levels. The advancement of agriculture and the rise of society. Agricultural extension plays an important role in developing the expertise and knowledge of farmers by replacing traditional methods and methods with modern production methods and methods. The role of agricultural extension is not limited to the process of transferring and communicating the results of research and the new practices, experiences, and agricultural methods to farmers and peasants, but rather its effective research on the various obstacles facing farmers and identifying their needs. Then the transfer of these problems and needs to research centers to find appropriate solutions or ways to address them (Kashash, 2009: 202). Hence the idea of this research to answer the following questions:

1- . What is the level of knowledge of eggplant farmers of the most important recommended scientific recommendations for growing it in greenhouses in Zalaya village?

2- What is the relationship between the level of knowledge of eggplant farmers with the most important recommended scientific recommendations for growing it in greenhouses and each of the following independent variables (age, educational level, land possession, information sources, the number of years of crop cultivation)?

#### ● **Research Objectives**

1-Determine the level of knowledge of eggplant farmers with the most important recommended scientific recommendations for growing it in greenhouses in Zalaya village.

2-Determine the relationship between the level of knowledge of eggplant farmers' knowledge of the most important recommended scientific recommendations for growing it in greenhouses and each of the following independent variables (age, educational level, land possession, information sources, the number of years of crop cultivation).

#### ● **Research hypotheses:**

1. There is no significant relationship between the knowledge level of eggplant farmers with the most important scientific recommendations regarding its cultivation in greenhouses and age.
2. There is no significant relationship between the knowledge level of eggplant farmers with the most important scientific recommendations regarding its cultivation in greenhouses and the educational level.

3. There is no significant relationship between the knowledge level of eggplant farmers and the most important scientific recommendations regarding cultivation of eggplant in greenhouses and the possession of land.
4. There is no significant relationship between the knowledge level of eggplant farmers with the most important scientific recommendations regarding its cultivation in greenhouses and information sources
5. There is no significant relationship between the knowledge level of eggplant farmers with the most important scientific recommendations regarding its cultivation in greenhouses and the number of years of crop cultivation

● **Procedural definitions:**

- 1- knowledge level: The level of information that eggplant farmers possess with the scientific recommendations related to growing it in greenhouses.
- 2- Greenhouse farmers: All the farmers who use greenhouses to produce vegetables in Zaliya village / Samarra district
- 3- Protected agriculture: vegetable cultivation under controlled conditions at the premature time and it is protected from weather conditions by growing them under plastic sheets of all kinds. Among these vegetables is the eggplant product.

● **Materials and research methods**

**1- Research methodology:**

The descriptive approach was used in conducting the research in order to detect the reality, and to identify the knowledge level of eggplant farmers with the most important scientific recommendations for growing it in greenhouses.

**2- Research area.:**

The research area is the Zalaya village of in the Samarra district.

**3- Geographical scope of the search:**

Al Zalaya village was chosen as an area to conduct the research for the following reasons:

- 1- a- The large capacity of the geographical area
- 2- b- Taking the effort, costs and time of the researcher into consideration.
- 3- c- Eggplant is one of the most common vegetable product grown in greenhouses, and upon it, it was focused in the current research.

**4- Research Society and Sample:**

Research Population included eggplant farmers in greenhouses in Zaliya village / Samarra district, whose number is (148)\* farmers, excluded from them (15) farmers included in the pretest of the questionnaire and thus the total number of community members is (133). A random sample of (75%) was taken from them and the number of those included in the study became (100) farmers.

**Measuring search variables:**

**A- Measurement of Independent Factors: The independent variables included in the study were measured as follows:**

- 1- Age: It was measured by the number of years of age of respondents until the date of data collection.
- 2- The educational level: It means the educational stage respondents completed, as the educational level was measured according to the following:  
illiterate, read and write, elementary graduate, intermediate graduate, high school graduate, institute graduate, college graduate, and for the purpose of measurement, she was given the following numerical values: (1,2,3,4,5,6,7) respectively.

Land possession: It was measured by classifying the respondents' lands into four categories (ownership, contract, lease, and participation) and the numerical values were given (1,2,3,4) respectively.

- 3- Sources of information: It was measured through (10) paragraphs to find out the sources of information using the scale (always, sometimes, I do not get) and the numerical values were given (1,2,3) respectively. Thus, the values expressed for the variable are limited between (10-30).
- 4- The number of years of crop cultivation: It was measured in the number of years the crop was grown

### **B – Measuring knowledge level of eggplant farmers in greenhouses using the most important recommended scientific techniques:**

The level of knowledge of eggplant growers of the most important scientific recommendations for growing it in greenhouses was measured by: (50) paragraphs, the degree of (1) was specified for the correct answer and (zero) for the wrong answer, and therefore, the highest score obtained by the respondent is (50) and the lowest score is (0), after obtaining knowledge level scores for all

the respondents, and for the sake of describing the respondents, the knowledge level scores were \* The names and numbers of protected vegetable farmers (greenhouses) in the village of Zalaya on 1/13/2020 were obtained from the records of the Salah al-Din Agriculture Directorate.

classified into three levels: low, medium, and high, and the number of respondents, the percentage and the average level of knowledge for each category were calculated.

As for the relative importance of the fields of the knowledge level of greenhouse, growers has been appreciated by experts. Where their rates and estimates were approved for each area of agricultural development obstacles, as shown in Table (1)

**Table (1): The average relative importance of expert estimates for the fields of knowledge level of greenhouse growers**

No	Domains of the cognitive level	Average relative importance of expert opinion	Number of paragraphs
1	Create a greenhouse	24	12
2	Agricultural operations / soil service	20	10
3	Agricultural operations / crop service	42	21
4	Marketing operations	14	7
	Total	100%	50

### **Statistical methods and means:**

For the purpose of reaching the research aims, many statistical methods and means were used, such as: range, arithmetic mean, simple correlation coefficient (Pearson), Spearman's law of correlation, (t) test, percentage.

### **Results and discussion:**

The first Objective: Determine the level of knowledge of eggplant farmers with the most important recommended scientific recommendations for growing it in greenhouses in Zalaya district.

The results showed that the highest numeric value for the level of knowledge of eggplant farmers with the most important recommended scientific recommendations for growing it in

greenhouses is 44 degrees, and the lowest numerical value is 19 on the knowledge level scale with a degree between (0-50) degrees with an average of 30.5 degrees and a standard deviation of 5.03, eggplant farmers were divided into three categories according to their knowledge scores (low, medium, high) as shown in the table No (2).

**Table (2) Distribution of the respondents according to the knowledge level of eggplant farmers with the most important recommended scientific recommendations for growing it in greenhouses in Zalaya district**

Categories	Cognitive level degrees	the number	%	Cognitive level rate	$\bar{X}$	s.d
Low	19-27	24	24	24.5	30.5	5.03
Middle	28-36	61	61	30.6		
High	37-45	15	15	39.9		
Total		100	100			

from the table No (2), it shows that the majority of the respondents have a medium level of knowledge that tends to Low, and this may be due to many reasons, including the weakness or lack of extension service provided to vegetable farmers with the most important scientific recommendations for cultivating eggplant, and for the farmers' adherence to the traditional farming methods that they are accustomed to in cultivating their open fields.

The second Objective: Determine the relationship between the level of knowledge of eggplant farmers with the most important recommended scientific recommendations for growing it in greenhouses and each of the independent variables, namely:

**First - Age: -**

The results of the research showed that the ages of the respondents ranged between (20-57) years with an average of 34.5years and a standard deviation of 10.7 degrees. The respondents were distributed into three age categories as shown in table No. (3):

**Table (3) Distribution of respondents according to age groups and its relationship to knowledge level**

Age groups	the number	%	knowledge level average	Correlation coefficient	Significant at the level
20-32	56	56	29.2	0.28**	0.01
33-45	23	23	30.5		
46-58	21	21	34		
	100	100			

The table No (3) indicates that the highest percentage of respondents fall within the first age group and the lowest percentage falls within the third age group and to find the correlation between

the knowledge level of eggplant growers with the most important scientific recommendations on growing eggplant in greenhouses and age, the simple Pearson correlation the coefficient was used, whose value was (0.28 \*\*). This indicates the existence of a positive significant relationship at the probability level (0.01). So we reject the statistical hypothesis and accept the alternative hypothesis. This means that the level of knowledge of farmers increases with increasing age, and this is due to the fact that older farmers have more field experience as a result of accumulating years of agricultural work.

### Second - Educational level:

The results of the research showed that the educational level of the respondents ranged between (illiterate - college), and the respondents were divided according to the educational level into six categories, as shown in the following table No. (4):

**Table (4) Distribution of eggplant growers according to the educational level categories and their relationship to the knowledge level**

educational level categories	number	%	The knowledge level	Correlation coefficients	Significant at the level
Illiterate	12	12	24	0.45**	0.01
read and write	18	18	30		
elementary graduate	11	11	30		
intermediate graduate	13	13	31		
high school graduate,	26	26	30		
institute graduate	9	9	34		
college graduate	11	11	36		
Total	100	100			

To find out the correlational relationship between the knowledge level of eggplant farmers with the most important scientific recommendations related to cultivating it in greenhouses and the educational level, used the Spearman correlation equation, whose value was (0.45 \*\*). This indicates that there is a significant correlation relationship at the level of 0.01. Therefore, we refuse the statistical hypothesis, and we accept the alternative hypothesis, which means that the knowledge level of greenhouse farmers increases with the increase in the educational level. This result may be attributed to the fact that more educated farmers seek to obtain and benefit from many educational experiences, especially those related to greenhouses. Also, farmers with educational certificates are more aware of the use of everything new and then applies the practices more than others.

### Third: - Land possession:

When the respondents are distributed according to the possession of the land, it was found that the highest percentage of them are from the category of contract holders, then the owners, then the leaseholders and finally the group of participants, as in the following table 5:

**Table (5) Distribution of eggplant growers according to categories of land possession and their relationship to knowledge level**

land possession categories	number	%	Cognitive level average	Correlation coefficient	Significant at the level
Participants	13	13	27	0.52**	0.01
Rent	20	20	28		
Contract	42	42	31		
Owner	25	25	34		
Total	100	100			

To find out the correlational relationship between the knowledge level of eggplant farmers with the most important scientific recommendations related to cultivating it in greenhouses, and the possession of the land, the Spearman correlation equation was used, whose value was (0.52\*\*), and this indicates there is a positive direct relationship between them this indicates the existence of a significant correlation at 0.01 level. Therefore, we reject the statistical hypothesis and accept the alternative hypothesis. The reason may be Contract Owners may seek to increase productivity in order to achieve remunerative profits and pay the contract value.

**Forth: - Sources of information:**

The results showed that the lowest score obtained by the respondents was (7), the highest was (29), This variable was divided into three categories as follows: as in the following table 6:

**Table (6) Distribution of eggplant farmers according to categories of information sources and their relationship to knowledge level**

information sources Categories	number	%	The average of the knowledge level	the significant correlation	Significant at the level
7-14	35	35	29	0.16	Not Significant at the level
15-22	31	31	32		
23-30	34	34	30		
total	100	100			

The table No (6) indicates that the highest percentage of respondents obtaining information resources was 35% within the high category, with an average knowledge of 31, and the lowest percentage in the intermediate category of 31%, with an average of 32 .to find the correlation between the knowledge level and the information sources, used the Spearman correlation equation numerator correlation coefficient (0.16) This indicates that there is no relationship between the two variables. To accept the statistical hypothesis.



**Five : - The number of years of crop cultivation**

The results of the research showed that the number of years of cultivation of eggplant ranged between (10-36) years, with an average of 24.2 years and a standard deviation of 8.2. The respondents were divided into three categories, as shown in the following table No. (7)

**Table (7) Distribution of the respondents according to the categories of the number of years of cultivation of eggplant and their relationship to the cognitive level.**

The number of years	number	%	The average of the knowledge level	$\bar{X}$	s.d	the significant correlation	Significant at the level
18 -10	28	28	29	24.2	8.2	0.31**	0.01
27– 19	28	28	30				
36- 28	44	44	32				
total	100	100					

To find out whether there is a correlation between the level of knowledge with the scientific recommendations on growing eggplant in greenhouses and the number of years of cultivation I used the simple person correlation equation with a value of 0.31 \*\*, and this indicates the existence of a significant correlation relationship at 0.01 level, so we reject the null hypothesis, and we accept the alternative hypothesis. This result may be interpreted to the fact that the number of years that eggplant growers spend growing it generates accumulated knowledge as a result of their passing through many experiences and providing them with information in growing this crop.

**Conclusions:**

From the results of the study, the following conclusions can be drawn:

- 1- The respondents still adhere to some traditional methods of protected agriculture, including the methods used in the cultivation of plastic tunnels, and did not rise to the agricultural standards necessary for the cultivation of greenhouses.
- 2- Eggplant growers in greenhouses with more knowledge is the eldest, those with a higher educational level, and the owners of land, property and contracts, and therefore it can be judged that this segment of farmers can be approached with extension activities to raise their level of efficiency and production. Local leaders and mentorship others can learn from.
- 3- Concentrating extension efforts and participating in extension activities and providing agricultural machinery and supplies in the front of farmers will lead to raise the level of knowledge and then the quantity, and quality of agricultural production, and will push continuously to follow the scientific and advisory recommendations, which is hoped for a continuous increase in knowledge, which may transform their plastic houses into indicative views For others, we guarantee through it to raise their knowledge and achieve their cognitive, and productive progress.

**Recommendations:**

- 1- In order to avoid the decline in the knowledge level of eggplant cultivation with the most important recommended agriculturally scientific recommendations and to fill the deficiency in agricultural information and knowledge. The matter requires the Governorate Agriculture Directorate to plan training programs based on knowledge needs, and to intensify extension activities based on planned

programs to work to fill the lack of knowledge related to what is required by protected agriculture, especially in greenhouses.

- 2- Providing access to knowledge from many agricultural, extension, educational sources. With the necessity of coordination and cooperation with colleges, institutes, agricultural research stations continuously to know the latest developments in the field of agricultural extension and agricultural research.
- 3- Make the department of agriculture in the governorate to prepare a number of agriculture extension worker trained in the field of protected agriculture from graduates of agricultural colleges to take over the task of agriculture extension worker for greenhouse farmers in all fields due to its importance in providing vegetables to the markets.
- 4- Providing simple informative brochures for greenhouse farmers to deliver information and knowledge to them.

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## معرفة مزارعي الباذنجان بأهم التوصيات العلمية لزراعتها في البيوت المحمية وعلاقتها ببعض المتغيرات في قرية الزلاية / قضاء سامراء

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### الخلاصة

استهدف البحث التعرف على مستوى معرفة زراع الباذنجان بأهم التوصيات العلمية الخاصة بزراعته في البيوت البلاستيكية في قرية الزلاية التابعة لقضاء سامراء وعلاقتها ببعض المتغيرات . اذ شمل مجتمع البحث زراع قرية الزلاية والبالغ عددهم (133) مزارع , وتم اختيار عينة عشوائية بنسبة (75%) ليصبح عدد المزارعين ( 100 ) مبحوث . وتم جمع البيانات بطريقة المقابلة الشخصية باستخدام استمارة استبيان اعدت خصيصاً لهذا الغرض .تكونت من جزئين .جزء خاص بالعوامل المستقلة للمبحوثين وجزء ثاني خاص بالعوامل التابعة و وكانت الفقرات في هذا الجزء من نوع ( الاختيار من البدائل , بنعم ) . وتم بناء مقياس المستوى المعرفي لزراع البيوت البلاستيكية, ويتضمن (4) مجالات, المجال الأول انشاء البيت البلاستيكي يضم (12) فقرة , المجال الثاني العمليات الزراعية / خدمة التربة يضم (10) فقرات المجال الثالث العمليات الزراعية / خدمة المحصول يضم(21) فقرة المجال الرابع يضم العمليات التسويقية (7) فقرات .. وبعد التأكد من الصدق الظاهري وصدق المحتوى لأداة القياس بعرضها على المختصين تم احتساب الثبات بطريقة الفا كرونباخ. واستخدم في عرض وتحليل البيانات كل من النسبة المئوية، والمتوسط الحسابي، ومعامل الارتباط البسيط (Pearson)، ومعامل الارتباط الرتبتي (Spearman)، واختبار t لتحليل بيانات البحث باستخدام برنامج لتحليل الاحصائي Spss. وجاءت اهم نتائج البحث على النحو التالي :

- ان 52% من المبحوثين كان مستوى معارفهم ضمن الفئة المتوسطة ويمتوسط مقدارها (30.5) درجة، وهذا يعني ان أكثر المبحوثين لديهم نقص في مستوى معرفة زراع محصول الباذنجان بأهم التوصيات العلمية والخاصة بزراعته في البيوت البلاستيكية.

- وجود علاقة الارتباطية بين المستوى المعرفي لزراع الباذنجان بأهم التوصيات العلمية الخاصة بزراعته في البيوت البلاستيكية وكل من: العمر، المستوى التعليمي، حيازة الارض.

**كلمات مفتاحية:** الباذنجان، مستوى معرفي، بيوت بلاستيكية.