The Level of Application of Scientific Recommendations in the Field of cultivation and Serving Palm Groves in Al-Hussainiya District | Karbala Governorate

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Abstract.
The research aimed to determine the level of application of scientific recommendations in the field of palm grove cultivation and service in Al-Hussainiya District | Karbala Governorate and to find a correlation between the level of application of scientific recommendations in the field of palm grove cultivation and service and a number of independent factors for farmers represented by (academic achievement, agricultural experience, possession of equipment and machinery, and the attitude towards palm cultivation). The research community included all palm grove owners in Al-Hussainiya District / Karbala Governorate who are officially registered in the records of the two agricultural divisions (Al-Hussainiya and Aoun) and according to the agricultural associations to which they belong, which amounted to (12) agricultural associations and their number is (6643) orchard owners, and a random sample of 50% was drawn from the agricultural associations and (6) agricultural associations and their total is (1488) orchard owners, then a simple random sample was taken from them at a rate of (10%), thus the size of the study sample was (138) orchard owners. A questionnaire was prepared consisting of two sections. The first section included the independent factors of orchard owners, while the second section included (55) phrases, each of which represents a scientific recommendation in the field of planting or serving palm orchards. Several statistical methods were used to achieve the research objectives, including (range, average, Pearson's correlation law, Spearman's correlation law, and t-test). The results of the study showed that the level of application of the orchard owners of the scientific recommendations is average and tends to increase. It also showed the existence of a significant correlation between the level of application of the scientific recommendations and most of the independent factors of the orchard owners. The researchers concluded that farmers need training programs on the application of modern scientific recommendations in the field of palm grove service, represented in some modern service operations such as control, fertilization, and fruit thinning methods. The researchers recommend taking into consideration the factors that showed a significant correlation with the level of application of the palm grove owners of the scientific recommendations in training palm grove owners in the research area and establishing research centers or stations for palm cultivation in which modern technologies are applied in all agricultural operations related to the cultivation and service of palm trees to convince orchard owners to adopt these technologies and apply them in their orchards.

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Keywords. Palm trees, application level, scientific recommendations, palm cultivation, palm tree service.

.1 Introduction

Increasing agricultural productivity and expanding the use of agricultural land is the best and most feasible way to eliminate hunger, which highlights the need to expand investments in agricultural research and extension systems in developing countries in order to increase productivity per unit of land and per agricultural worker [1]. Agriculture in the Arab world is an important means of achieving development goals and achieving food security and liberating it from the cycle of dependence and import, which has become one of the most prominent problems facing the world at the present time. It has been concluded that the agricultural sector, despite its human and material capabilities, is unable to achieve self-sufficiency for the population due to the lack of reliance on advanced and smart technologies in agriculture. In addition, most Arab countries are located in dry and semi-dry areas, which has made them suffer from a food gap that has burdened them and put the issue of food security at a dangerous turning point [2]. The Iraqi agricultural sector witnessed major developments during the period (2000 to 2022) and faced many challenges affected by the economic and political conditions in the country. The agricultural sector played a prominent role in contributing to the gross domestic product, but the extent of this contribution was affected by various factors. At the beginning of this period, the agricultural sector played a crucial role in achieving food self-sufficiency and contributed significantly to the gross domestic product. However, the sector faced major challenges over the years, such as the impact of internal conflicts and changes in weather conditions, which affected crop production and exacerbated poverty levels in rural communities [3]. Iraq has transformed from an agricultural country that exports many agricultural commodities and produces food and can cover its needs to a major food importer. Decades of sanctions, violent conflict, ineffective government policies, exceptional climate change, water scarcity, and competition with cheap imports have disrupted value chains and distorted the links between producers and markets. The Ministry of Agriculture estimates that Iraq has lost nearly 40 percent of its agricultural production in the wake of the political crises that the country has gone through. Despite government attempts to restore the situation to what it was before these events, there is still weakness in this sector and trying to reform it requires a lot of attention and concerted efforts to put the country back on the right track [4]. Iraq is considered one of the most suitable geographical areas for palm cultivation in the world, as the environmental requirements of the palm tree match the prevailing climatic conditions, which are characterized by high temperatures and low humidity in the central and southern regions of Iraq, where palm cultivation and date production flourish [5]. Palm trees were among the first plants cultivated in Iraq, and played an important role in the beginning of modern civilization. They were used as a source of food, shade from the desert sun, and materials needed to build homes. The tree became a symbol of prosperity and fertility in the Middle East and

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is believed to have played an important role in the spread of population. Archaeologists have discovered a 5,000-year-old written record of palm trees planted along the Tigris and Euphrates rivers. Some of its provisions were inherent in this tree to preserve and benefit from it [6]. Karbala Governorate is one of the most important Iraqi governorates in the field of palm tree cultivation and the production of various types of dates, especially commercial ones. Statistics from the Central Statistical Organization for the year 2021 indicate that Karbala Governorate ranked third in production quantity after Baghdad and Babylon, with an estimated production of (90,959) thousand tons, representing (13.5%) of Iraq's total production [7]. Despite the importance of palm cultivation in the governorate, palm productivity is still low compared to global production or neighboring countries, as palm productivity for the year (2000) reached (67.95) kg, while palm productivity for the year (2021) reached (56.52) kg (Ministry of Planning - Central Statistical Organization - Date Production Reports). Perhaps the reason for this decline is the failure of palm grove owners to apply scientific recommendations in all palm tree planting and service operations correctly. Hence, the idea of the research came to determine the level of application of palm grove owners in the research area of scientific recommendations related to planting and service of palm groves by answering the following questions:

-1What is the level of application of palm grove owners of scientific recommendations in the field of palm tree cultivation in Al-Hussainiya District / Karbala Governorate.

-2What is the level of application of palm grove owners of scientific recommendations in the field of palm tree service in Al-Hussainiya District / Karbala Governorate.

-3What is the descending order of research journals and axes?

-4What is the correlation between the level of application of palm grove owners of scientific recommendations in the processes of palm tree cultivation and service and each of the following independent variables (Educational level, agricultural experience, possession of equipment and machinery, and the attitude towards palm tree cultivation

.1.1Research Objectives

.1Determine the level of application of palm grove owners of scientific recommendations in the field of palm tree cultivation in Al-Hussainiya District / Karbala Governorate?

.2Determine the level of application of palm grove owners of scientific recommendations in the field of palm tree service in Al-Hussainiya District / Karbala Governorate?

.3Arrange the research areas and axes in descending order.

.4Determine the correlation between the level of application of palm grove owners of scientific recommendations in the processes of planting and serving palm trees and each of the following independent variables (academic achievement, agricultural experience, possession of equipment and machinery, and the trend towards palm tree cultivation.(

.1.2Statistical hypotheses

.1There is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for palm tree planting and service operations in Al-Hussainiya District / Karbala Governorate and Educational level.

.2There is no statistically significant correlation between the level of application of palm grove owners of scientific

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recommendations for palm tree planting and service operations in Al-Hussainiya District / Karbala Governorate and agricultural experience.

.3There is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for palm tree planting and service operations in Al-Hussainiya District / Karbala Governorate and possession of equipment and machinery.

.4There is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for palm tree planting and service operations in Al-Hussainiya District / Karbala Governorate and the attitude towards palm cultivation.

.1.3Operational Definitions

-1Application level: This study refers to the extent to which palm grove owners apply scientific recommendations related to palm tree cultivation and service operations in Al-Hussainiya District / Karbala Governorate.

-2Scientific recommendations: This refers to a set of scientific research outputs related to palm tree cultivation and service operations published by the Agricultural Extension Service in the form of scientific recommendations.

.3Agricultural experience: The experience of the orchard owner in the field of palm tree cultivation and service estimated by the number of years.

.4Possession of equipment and machinery: The number of machines and equipment owned by orchard owners for palm tree service.

.2Materials and Methods

.2.1Research Methodology

The descriptive approach is considered one of the most appropriate approaches in this research to reach the set objectives, as it is an appropriate approach through which detailed data and facts can be reached that represent the reality of the respondents in a specific period [8]. This approach is compatible with the nature of the phenomenon being studied, which includes identifying the level of application of scientific recommendations in the field of planting and serving palm groves in Al-Hussainiya District/Karbala Governorate.

.2.2Data sources:

The research generally relied on obtaining data from a group of sources, the first of which was field data, which was collected from date farmers in the researched area through designing a questionnaire form that was consistent with the research objectives, through personal interviews.

.2.3Search Area

Al-Hussainiya District | Karbala Governorate, which includes both Al-Hussainiya and Aoun agricultural branches, was chosen as the area to conduct the research because most of the farmers in these two areas are palm grove owners, with their number reaching (6643) farmers or orchard owners out of the total number of orchard owners in the governorate, which is (18044). In addition, this district constitutes the largest percentage in the contribution rate, which reached about (47%) of the area planted with palm trees, which is (54830) dunums in them, out of the total area of palm groves in Karbala Governorate, which is (116304) dunums, as shown in Table (1). Since the researcher is from the Al-Hussainiya district, he noticed a decrease in palm productivity, as it reached (kg/palm 56.52) in the year (2021), while palm productivity in the year (2000) was estimated at (kg/palm 67.95).

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Due to the importance of implementing scientific recommendations to increase palm productivity and the lack of studies in this field, according to the researcher's knowledge.

Table 1. Area of orchards and number of farmers in Karbala Governorate 2021.

Sequence	Agricultural Division	Preparing farmers	Orchard area (acre)	Area percentage %
1	Al-Hussainiya	3918	28132	24.2
2	Aoun	2725	26698	23
3	Western schedule	4035	23000	19.8
4	alkhayrat	3000	12100	10.4
5	The Center	1793	10603	9
6	Date eye	1500	8000	6.9
7	alhindia	1060	6750	5.8
8	alsahrawia	13	1021	0.9
The total		18044	116304	100

Source: Prepared by the researcher based on data from the Karbala Agriculture Directorate - Agricultural Statistics Division.

.2.4Research Community and Sample

The research community included all palm grove owners in Al-Hussainiya district/Karbala Governorate who were officially registered in the records of the two agricultural divisions (AlHussainiya and Aoun) and according to the agricultural associations to which they belong, which amounted to (12) agricultural associations, namely (Al-Waei, Al-Sumoud, Al-Taf, Sayyid AlShuhada, Al-Hussainiya Divorcees, Al-Sabtain, Al-Nasr, Al-Ta'meem, Al-Wand, Al-Intifada, AlKaramah, and Aoun Divorcees), with a total of (6643) orchard owners. A random sample of 50% was drawn from the agricultural associations, with (6) agricultural associations, namely (Al-Waei, AlTa'meem, Al-Karamah, Al-Wand, Al-Hussainiya Divorcees, and Al-Sumoud), with a total of (1378) orchard owners. Then a simple random sample of (10%) was taken from them, and thus the size of the study sample amounted to (138) orchard owners, as shown in Table No. (2).

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Table 2. Distribution of the research sample.

Sequence	Association name	Research community	Research sample
1	Al-Waei	218	21
2	Al-Ta'meem	363	36
3	Al-Karamah	253	25
4	Al-Wand	171	17
5	Al-Hussainiya	118	12
6	Al-Sumoud	266	27
The total		1378	138

.2.5Preparing the Questionnaire Form

One of the appropriate methods for obtaining information, data and facts that are objective and achieve the research objectives is the questionnaire [9]. A questionnaire form was prepared consisting of three parts:

Part One: It included a set of questions to identify some personal characteristics of palm grove owners, namely (Educational leve, agricultural experience, ownership of equipment and machinery, and tendency towards palm cultivation.(

 Part Two: This part included a test to identify the level of application of scientific recommendations in the field of palm grove cultivation and service, which consists of (55) paragraphs distributed over two areas, with (13) paragraphs for the first area distributed over three axes, and (42) paragraphs for the second area distributed over (7) axes, as shown in Table (3).

Table 3. Distribution of research areas and axes.

Sequence	Field		The axis Number of paragraphs
1	Palm cultivation	Land planning and planting distances	5
		Select a variety	3
		Planting seedlings	5
2	Palm Service	Irrigation	6
		Fertilization	7
		Pruning and trimming	5
6		Vaccination	
5		Lighten the fruits	
3		Altarkis	
10		Combating	
The total			55

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.2.6Measuring Research Variables

Measurement is defined as the process through which we obtain the numerical values of the research variables [10]. The research variables were measured as shown below:

.2.6.1First - Measuring the Independent Variables

-1Educational leve: It was measured through the alternatives (illiterate, reads and writes, primary, intermediate, preparatory, institute, college, higher degree) and the values (1, 2, 3, 4, 5, 6, 7, 8) were given.

-2Agricultural experience: It was measured by the number of years the respondent worked in the field of palm grove cultivation and service.

-3possession of equipment and machinery: It was measured through the two alternatives (I own, I do not own) and the values (1.0) were given respectively.

-4The attitude towards palm cultivation: This variable was measured by (6) statements, three of which were positive and three negative, with alternatives (agree, neutral, disagree) placed in front of them. The values (3, 2, 1) were given to the positive statements and the values (1, 2, 3) to the negative statements. Thus, the values expressing the attitude were limited to (6 - 18) degrees.

.2.6.2Second - Measuring the Level of Application

The level of application of palm grove owners was measured through a test that included (55) paragraphs, each of which represented a scientific recommendation in the axes related to the fields of palm tree cultivation and service. Three options were given for each paragraph to answer (apply, apply some type, do not apply). The values were given (2, 1, zero) and the grades were distributed over the axes and fields of study as shown in Table (4).

Table 4. Distribution of scale scores according to axes.

Sequence	Field	The axis	Number of parag	Scale degree
1	Palm cultivation	Land planning and planting distances	5	0-10
Select a variety		3	0-6	
Planting seedlings		5	0-10	
2	Palm Service	Irrigation	6	0-12
Fertilization		7	0-14	
Pruning and trimming		5	0-10	
Vaccination		6	0-12	
Lighten the fruits		5	0-10	
altarkis		3	0-6	
Combating		10	0-20	
The total			55	0-110

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.2.7Statistical Means

In order to analyze the data, obtain results, and reach the research objectives, many statistical methods and means were used, including (range, arithmetic mean, Pearson's law, Spearman's law, and t-test.(

.3Results and Discussion

The results were discussed according to the research objectives as follows:

The first objective: Determining the level of application of palm grove owners to scientific recommendations in the field of palm tree cultivation in Al-Hussainiya District / Karbala Governorate

The research results showed that the highest numerical value for the level of application obtained by palm grove owners in the field of palm cultivation is (26) degrees, and the lowest numerical value for the level of application is (7) degrees, with an arithmetic mean of (19.81) degrees, and a standard deviation of (0.62) degrees, and palm grove owners in the field of palm cultivation operations were distributed into three categories as shown in Table (5.(

Table (5): Distribution of palm grove owners according to the level of application of palm cultivation operations.

Application Level Categories	number	%	Application level	$\overline{X}$	**SD**
Low (7- 12)	10	7.25	9.8	19.81	0.62
Middle (13- 18)	36	26.08	15.97		
High (19- 26)	92	66.67	22.41		
the total	138	100			

Table 5 indicates that (92) respondents, representing the highest percentage, which is (66.67%), were in the high category with an average application level of (22.41) degrees, and (36) of the respondents, representing (26.08%), were in the medium category with an application level of (15.97) degrees. (10) of the respondents, representing (7.25%), were in the low category with an application level of (9.8). Therefore, the level of application of palm grove owners in palm cultivation operations is described as high tending towards average, and this may be attributed to the tendency of the owners of the groves to cultivate new varieties with high economic returns and globally known varieties with high prices in the market.

The second objective: Determining the level of application of palm grove owners of scientific recommendations in the field of palm tree service in Al-Hussainiya District / Karbala Governorate.

The research results showed that the highest numerical value for the level of application obtained by palm grove owners in the field of applying palm tree service operations is (84) degrees, and the lowest numerical value for the level of application is (19) degrees, with an arithmetic mean of (58.45) degrees. And a standard deviation of (0.78) degrees, and palm grove owners were distributed in the field of palm tree service operations into three categories as shown in Table (6.(

Table (6): Distribution of palm grove owners according to the level of application of palm service operations

Application Level Categories	number	%	Application level	$\overline{X}$	SD
Low (19 – 40)	15	10.87	32.13	58.44	0.78
Middle (41 – 62)	63	45.65	52.17		
High (63 – 84)	60	43.48	71.6		
the total	138	100			

Table 6 shows that (63) respondents, representing the highest percentage, which is (45.65%), were in the medium category with an average application level of (52.17) degrees, and (60) of the respondents, representing (43.48%), were in the low category with an average application level of (71.6) degrees. (15) of the respondents, representing (10.87%), were in the low category with an average application level of (32.13) degrees. Therefore, the application level of palm grove owners in palm grove service operations is described as average tending towards increase. This may be attributed to the fact that palm grove service operations began to develop with the development of technology, the availability of modern agricultural information, and the rise in the educational level of orchard owners. In addition, most of the orchard owners hold primary and higher degrees, especially from agricultural colleges, institutes, and preparatory schools, which made them aware of the importance of applying modern technologies to increase production and improve its quality.

.Third objective: Arranging the research fields and axes in descending order.

A. Arranging the research fields in descending order.

The research fields were arranged in descending order according to the percentage weight and the results were as in Table 7.-

Table 7- Descending order of research fields

Field	Average	Number of paragraphs	Maximum value	Weight Percentage	Rank
Palm Tree Cultivation	19.81	13	26	76.19	1
Palm Tree Service	58.45	42	84	69.57	2

Table 7 shows that the field of palm cultivation ranked first with a percentage weight of (76.19). The reason may be the knowledge and experience of orchard farmers in the process of planting palm trees, while the field of palm tree service ranked second with a percentage weight of (69.57). The reason may be the farmers' lack of knowledge of applying modern scientific recommendations in the field of palm orchard service represented in some modern service operations such as pest control, fertilization, and the method of thinning fruits.

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B. Arranging the research axes in descending order.

The research field axes were arranged in descending order according to the
percentage weight and the results were as shown in Table (8.(

Table (8): Arrangement of study axes in descending order according to percentage weight

Axis	Average	Number of paragraphs	Max value	Weight Percentage	Rank
Rounding	8.717	5	10	87.17	1
Selection of seedlings	4.775	3	6	79.58	2
Land planning and planting distances	7.696	5	10	76.96	3
Pollination	9.13	6	12	76.08	4
Concentration	4.384	3	6	73.06	5
Irrigation	8.42	6	12	70.16	6
Fertilization	9.63	7	14	68.78	7
Planting method	6.804	5	10	68.24	8
Control	12.51	10	20	62.55	9
Thinning fruits	5.659	5	10	56.59	10

Table 8 shows that the rounding axis came in first place, as it obtained the first place compared to the other axes with a percentage weight of (87.17). The reason may be that the rounding process is an easy process to implement and due to the accumulation of experience among orchard owners over the years in mastering the rounding process. The fruit thinning field came in last place with a percentage weight of (56.59). The reason may be that the farmer does not want to reduce the tree's load or does not know the benefit of fruit thinning on the quality of the crop and the tree's load in the coming year or does not know how to implement it.

Fourth objective: Determining the correlation between the level of application of palm grove owners of scientific recommendations for palm tree planting and service operations and each of the following independent variables:

- 1Educational level: The respondents were distributed according to the educational level into eight categories, as shown in Table 9.

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Table 9 - Distribution of respondents according to educational level

Categories	Number	Percentage	Average Application	Rs value	Morale
Illuminated	13	9.42	72.23	**0.21	Morale
Reads and writes	13	9.42	72.92		
Elementary	12	8.69	77.83		
Middle	19	13.76	75		
Preparatory	15	10.87	86.66		
Institute	22	15.95	81.77		
College	37	26.82	76.62		
Higher degree	7	5.07	88.57		
Total	138	100			

**Indicates that the relationship is significant at the (0.01) level.

Table 9 shows that the highest percentage of respondents was in the educational level category (college) with a percentage of (26.82) and an arithmetic mean of (76.62) degrees. The highest application percentage of respondents was in the educational level category (higher degree) where the application level reached (88.57) degrees, and the lowest application degree of respondents was in the educational level category (illiterate) with an application percentage of (72.23) degrees. To find the correlation between the level of application of palm grove owners of scientific recommendations for planting and servicing palm trees and the educational level, the rank correlation law (Spearman) was used, where its value reached (0.21), which indicates the existence of a significant correlation between the two variables. To test the significance of the correlation, Spearman's law was used, and it was found to be significant at the level of (0.01). Therefore, we reject the statistical hypothesis that states (there is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for planting and servicing palm trees in Al-Hussainiya District / Karbala Governorate and academic achievement). The reason for this may be that the respondents with higher educational levels have the ability to obtain information related to planting and servicing palm groves from different sources such as books, magazines, bulletins and the Internet, and thus their information and awareness of applying scientific recommendations are higher and more than other categories, and this result is consistent with What was reached by (Al-Dawkhi, 2018) and (Al-Bukhati, 2018) does not agree with what was reached by (Al-Jumaili, 2014) and (Al-Hijazi, 2013.(

- 2Agricultural experience:

The research results showed that the highest numerical value for the number of years the respondent practiced palm cultivation was (60) years, and the lowest numerical value was (3) years. The respondents were distributed according to agricultural experience into three categories, as shown in Table (10.(

Table (10) Distribution of respondents according to agricultural experience

Categories	Number	Percentage	Average Application	Rs value	Morale
Short (3-21) years	44	31.88	84.77	*0.16	Morale
Medium (22-40) years	59	42.75	77.91		
Long (41-60) years	35	25.37	70.65		
Total	138	100			

*It indicates that the relationship is significant at the (0.05) level.

The second category obtained the highest percentage of (42.75%) and the first category obtained the highest application level of (84.77) degrees. To determine the correlation between the level of application of palm grove owners with planting and service operations and agricultural experience, the simple correlation coefficient (Pearson) was used, which reached a value of (0.16), which indicates the existence of a correlation between the two variables. To test the significance of this relationship, the (t) test was used, and it was found to be significant at the level of (0.05), so we reject the statistical hypothesis that states (there is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for planting and serving palm trees in Al-Hussainiya District / Karbala Governorate and agricultural experience). Perhaps the reason for this is that working in the field of planting and serving palm trees accumulates experience among orchard owners in knowing how to apply these operations correctly. This result is consistent with what was reached by (Al-Janabi, 2002: 82), and does not agree with what was reached by (Al-Dayni, 2004) (and Al-Masoudi, 2007.(

- 3Possession of equipment and machinery:

The respondents were distributed according to their possession of service requirements into two categories, as shown in Table (11.(

Table (11) Distribution of respondents according to their possession of service requirements and its relationship to the level of application

Categories	Number	Percentage	Average Application	Rs value	Morale
owns	130	94.21	78.56	0.11	Non-moral
doesn't have it	8	5.79	73.25		
the total	138	100			

The results in Table 11 showed that (94.21%) of the respondents possessed the service requirements for palm trees, and their average application was (78.56) degrees, and that (5.79%) of the respondents did not possess the service requirements, and their average knowledge was (73.25) degrees. To find out whether there was a correlation between the

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level of application of palm grove owners of scientific recommendations for planting and serving palm trees and their possession of equipment and machines for serving palm groves, the Siberman rank correlation law was used, as its value reached (0.11), indicating the existence of a correlation between the two variables. To test the significance of the relationship, the (t) test was used, and it was found that the correlation was not significant between the two variables. Accordingly, we accept the statistical hypothesis that states (there is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for planting and serving palm trees in Al-Hussainiya District / Karbala Governorate and the possession of equipment and machines.(

- 4The attitudy towards palm cultivation:

The values expressing the trends of orchard owners towards palm cultivation ranged between (6 - 15). The respondents were distributed according to the range into three categories, as shown in Table (12.(

Table (12). Distribution of respondents according to the attitudy towards palm cultivation.

Categories	Number	Percentage	Average Application	Rs value	Morale
Negative (6-8)	3	2.18	71.66	**0.26	Morale
Neutral (9-11)	71	51.44	75.85		
Positive (12+)	64	46.38	81.23		
Total	138	100			

**Indicates that the relationship is significant at the (0.01) level.

Table 12 shows that more than half of the respondents fall into the neutral category at a rate of (51.44%) and the highest level of application was in the positive category at an application level of (81.23). To know the correlation between the two variables, Spearman's correlation law was used, where its value reached (0.26), and to test the significance of the correlation, the (t) test was used and it was found that the relationship is significant at the level of (0.01), and thus we reject the statistical hypothesis that states (there is no statistically significant correlation between the level of application of palm grove owners of scientific recommendations for palm tree planting and service operations in Al-Hussainiya District / Karbala Governorate and the attitudy towards palm cultivation). The reason may be attributed to the fact that the more the attitudy towards palm cultivation increases, the more the desire to know the modern scientific recommendations in the field of palm grove planting and service increases, which makes them know the importance of applying these recommendations and their impact on the quantity and quality of the produce, which makes them apply these recommendations more than others.

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Conclusions

.1The results of the study showed that the level of application of palm grove owners in palm cultivation operations is described as high tending towards average. We conclude from this that the owners of the orchards tend to choose new varieties with high economic returns and globally known varieties with high prices in the market.

.2The results of the study showed that the level of application of palm grove owners in palm service operations is average tending towards increase. We conclude from this that palm grove service operations began to develop with the development of technology and the availability of information about modern technologies, which made them know the importance of applying these technologies to increase production and improve its quality.

.3The results of the study showed that the field of palm tree service ranked second. We conclude from this that farmers need training programs to apply modern scientific recommendations in the field of palm grove service represented in some modern service operations such as combating, fertilizing and fruit thinning methods.

.4The results showed a statistically significant correlation between the level of application of palm grove owners of scientific recommendations for palm tree cultivation and service operations in Al-Hussainiya District/Karbala Governorate and each of (academic achievement, agricultural experience, and the attitudy towards palm cultivation). We conclude from this the importance of these factors in training palm grove owners in the research area

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Recommendations

.1

Caring for palm grove owners through the programs and activities of the Agricultural Extension Authority and agricultural organizations in Karbala Governorate, and that these activities are not limited to the cognitive aspect only, but include the skill aspect in the processes of planting and serving palm trees, such as fertilization, pest control, and fruit thinning.

.2Providing the needs of palm growers for the basic requirements to serve their orchards and providing production requirements in addition to machines and equipment for serving palm groves by the relevant agricultural departments in Karbala Governorate.

.3Taking into consideration the factors that showed a significant correlation with the level of application of palm grove owners of scientific recommendations in training palm grove owners in the research area.

.4Establishing centers or research stations for palm cultivation in which modern technologies are applied in all agricultural operations related to planting and serving palm trees to convince orchard owners to adopt these technologies and apply them in their orchards.

Sources

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