



THE APPLICATION LEVEL OF AGRICULTURAL EXTENSION RECOMMENDATIONS FOR THE DRIP IRRIGATION TECHNOLOGY IN RABIA DISTRICT, NINAWA GOVERNORATE, IRAQ

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Abstract

The research aimed to identify the application level of agricultural extension recommendations for drip irrigation technology by farmers in Rabia district in general, and to find the correlation between the farmers' application of agricultural extension recommendations for drip irrigation technology and the independent variables in the research, and ranking of the research items (questions) according to the level of application of farmers according to the weight of items (questions). The research included all the farmers in the Rabia District, who use the drip irrigation technology, the number (100) farmer, where a simple sample was taken by sample 50%, so, the number of farmers in the research was (50).

In order to obtain research data, the questionnaire was designed on two parts: the first part included a number of questions to obtain personal and social information about the farmer (age, educational level, size of agricultural land, type of agricultural tenure, previous training). The second part contains of (21 item-question) related to drip irrigation technology, where was placed in front of each item (4 alternatives), as following (I apply in high degree, I apply in moderately degree, I apply in slightly degree, not apply), It was gave it the following grades (4, 3, 2, 1), respectively. After the form was completed, it was presented to agricultural extension specialists validity content of scale, as presented to the specialists in the drip irrigation technology to ensure the scientific integrity of the items of research. The research data were collected during the month (January 2019). The results showed that the application level of farmers in Rabia Distract for the recommendations for drip irrigation technology in general is medium tends to low. The results also showed that the variables (age, size of agricultural land) have a positive correlation with the application level of drip irrigation technology, and the variables (The type of agricultural tenure previous training) has not significant correlation with the application level of farmers in research area for drip irrigation technology, also, the results show that the application level of farmers for drip irrigation technology is high in the following items (use of drip irrigation for all kinds of agricultural soils, use of drip irrigation in uneven lands, use of fertilizers and pesticides with drip irrigation water).

Key words: agricultural, extension, application level, drip irrigation, technology

Introduction

Water is the basis of existence in life, it is the source of drinking for humans and animals, and the source of agriculture, and that our lives on the globe connected with water, and undoubtedly water is the nerve of life and the most important component of its components. The water in the living cell is 50-60% of the weight of the cell, 70% of the total weight of the vegetables and more than 90% of the weight of the fruit, which is the

basic element of human stability and prosperity of the civilization and wherever found water and found manifestations of life (Al-Rubaie, 2008).

Water also has many functions in the human body, in addition to its use for drinking, as water dissolves food after digestion. Water is also essential for the formation of blood, lymphatic fluid, cerebrospinal fluid and other fluid in the body, such as sweat and tears. Scientists have stressed that water is necessary for human life, unlike food, because humans can live without food for 60 days but cannot afford to live without water for more than a

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week. If the body loses more than 20 percent of the water, the person is at risk of death (Ahmad, 1984).

The importance of water is determined in three main directions: people's lives, land reform and cultivation Energy generation, technology and development and progress (Gneedi, 2006).

Irrigation workers are constantly trying to rationalize water consumption from their sources with a view to finding suitable sources of water for agricultural production, especially in arid areas, where rainfall is the main source of all other water sources. Also, in order to promote agricultural development to meet the needs and demands of different individuals and communities, to find ways to achieve this, one of these ways is to develop, develop and apply different technologies in the field of agriculture, both plant and animal, and to counter this increase. We see the development of many agricultural technologies, including drip irrigation technology and some other methods that can benefit farmers to make the most of irrigation water. We see the development of many agricultural technologies, including drip irrigation technology and some other methods that can benefit farmers to make the most of irrigation water.

For the purpose of increasing production and maximizing the possible use of the unit area, and these goals are not achieved unless they reach the reality of the farmer, and must be able to use and benefit from the farmer, and knows the terms of use and determinants and positive effects and all things associated with this technology (Amer, 2001: Al-Zoghbi, 1997). Drip irrigation is one of the most modern methods of irrigation and one of the most important technologies developed with its great success in reducing the waste of water wealth and rationalizing its use as well as the economy in the use of fertilizers and fertilizers (Al-Amoud, 2003) Drip irrigation is the system through which water is added to the soil directly in quantities approaching the field capacity, and in the form of small droplets to the root area. Drip irrigation differs from others because it moisturizes only part of the soil and keeps the other parts dry throughout the season. This partial hydration results in many benefits and few problems. The water is added to the root zone of the plants only, and the area without roots has no water added, thus saving in added water quantities. The use of drip irrigation technology to increase seed germination rate in saline areas and reduce the amount of seeds planted for all plant crops is one of the fundamentals of agricultural production development.

This is done through the development of farmers' knowledge in the use of modern agricultural technologies, including drip irrigation technology, which is the

responsibility of agricultural extension in developing the knowledge of farmers in the use of modern agricultural techniques (Arab Organization for Agricultural Development, 2002: Qaisi, 2002). One of the priorities of maintaining food security requires raising the awareness of farmers and informing them of the various means and means by which to increase production and improve its quality, which requires a lot of appropriate guidance programs (Al-Samarrai, 1990).

The agricultural extension system seeks to make technological progress in the means of agricultural production and beyond that scope to achieve an integrated rural social renaissance through effective economic renaissance through the optimal use of available natural and human resources and modern agricultural technologies for irrigation and the economy of water use (Burton and Swanson, 1990).

Because drip irrigation requires the followers of the recommendations and the correct scientific methods to apply it to reality in order to prove its success for the farmer, and as a result of what was mentioned, and based on the principle of analysis and study of the level of knowledge of farmers in the method of drip irrigation. Which are considered. The starting point in planning extension programs to develop their level of knowledge. The current research problem was identified by asking the following question: Identify the application level of agricultural extension recommendations by farmers for the use of drip irrigation technology in Rabia area, - Identify the application level of each of the items (questions) covered in the research items.

Research Objectives

The research aims to achieve the following objectives:

1. Identify the application level of farmers in Rabia district of agricultural extension recommendations for drip irrigation technology in general.
2. Ranking the items (questions) of drip irrigation technology according to the application level by farmers depending to the percentage weight of items.
3. Finding the correlation between the application level of farmers for agricultural extension recommendations for drip irrigation technology and the independent variables in this research (age, educational level, size of agricultural land, type of agricultural tenure, previous training).

Materials and Methods

The Rabia district/Nineveh province was chosen as a research area. The research included all the farmers in

the Rabia district, which numbered 100 farmers, who using who using the drip irrigation technology (Rabiya Agriculture Division), where a simple random sample of 50% was taken, so, the number of farmers in the research sample is (50). For the purpose of obtaining the data for the research from farmers, a questionnaire was adopted consisting of two parts: the first part included a number of questions to obtain personal and social information about the farmer (age, educational level, size of agricultural land, type of agricultural tenure, previous training).

The second part includes (21 items - question), especially in the scientific recommendations for drip irrigation technology.

After the completion of the questionnaire in the initial form, it was presented to agricultural extension specialists to find the validity of items (questions) and improve it. Also, it was presented to specialists in the field of water and drip irrigation technology to verify the scientific integrity of the research items.

The application level was measured by placing the alternatives before each item (question) (I apply in high degree, I apply in moderately degree, I apply in slightly degree, not apply), with the following grades (4,3,2,1), respectively, and combining the answers for each farmer on each of items in the research, we will obtain a final score representing the application level of farmers for agricultural extension recommendations for drip irrigation technology.

(pre- test) of the sample was conducted on a sample of (30 respondents) from outside the main research sample. The reliability was found by the (split half method) and it was (0.82). The final research data were collected in January, 2019.

- The way of categories divide

The categories of independent variables were divided, as following:

1. Age: The categories of this variable were divided by the method of range (highest value -lowest value) divided on the number of categories and the result divide into three categories.
2. Education Level: It was divided by the following levels (does not read and does not write, reading and writing, graduate of primary school, graduate of secondary school, graduate of high school, graduate of college). These levels were given the following numeric values (5, 4, 3, 2, 1, 0), respectively.
3. Size of Agricultural land: The categories of this variable were divided using the rang method of the range

(highest value - lowest value) and the result divided on three categories.

4. Type of agricultural tenure: It was divided into the following categories (ownership, contracting, rent).

Previous training: It was measured through the following levels (trainee, non-trainee).

- Analysis of Data

After collecting of data, it has been used a number of statistical methods to analyze the research data, are: (frequency, Rang, Mean, Pearson's simple correlation coefficient, Correlation coefficient of Spearman Brown).

Results and Discussion

First: Identify the application level of farmers in

Table 1: Distribution of respondents according to their application level of agricultural extension recommendations for drip irrigation technology in general.

Percentage %	The number	Category of application level
26	13	Low(21-41)
58	29	Medium(42-62)
16	8	High(63- 84)
100%	50	Sum

The mean (45, 70)

Rabia district of agricultural extension recommendations for drip irrigation technology in general:

The results showed that the highest value obtained by the respondents in the items (questions) of drip irrigation technology (84), the lowest value (21), and an mean (45.70) and the respondents were divided into three categories according to the application level, as shown in table 1.

The above table shows that (58%) of the respondents applied the agricultural extension recommendations for drip irrigation technology in general is medium. The percentage of farmers in low category was (26%), while the percentage in high category was (16%) of the total respondents. This means that the application level of agricultural extension recommendations in the drip irrigation technology by farmers in the Rabia district is medium tends to low.

Second: Ranking the items (questions) of drip irrigation technology according to the application level by farmers depending to the percentage weight of the items:

Table 2 shows the order of the research items according to the application level of farmers according to the percentage weight of items.

The table above shows that the items that occupied

Table 2: The order of the research items according to the application level of farmers.

No.	Mean	Items (questions)
1	3,85	Use of drip irrigation for all kinds of agricultural soils
2	3,77	Use of drip irrigation in uneven lands
3	3,71	Use of fertilizers and pesticides with drip irrigation water.
4	3,65	Use of water free from impurities in drip irrigation.
5	3,55	Use of sand filters because they are more efficient than other filters.
6	3,51	Use easy-to-connect and maintenance drops.
7	3,07	Replace the damaged parts of the drip irrigation system.
8	3,02	Use of small diameter pipes (13-19 mm).
9	2,88	Use of long narrow sedimentation ponds.
10	2,82	Use of filters made of nylon or stainless steel
11	2,81	Pressure regulators are used on the main and subsidiary pipes at the beginning of each unit.
12	2,71	Use of drip irrigation in covered fields
13	2,69	I use the dripping pump (2-11 liters) per hour.
14	2,58	Use of sedimentary sedimentation basins.
15	2,54	The use of lubrication to improve the functioning of parts of the system.
16	2,51	I use the salt and impurities in drip irrigation.
17	2,40	Cleaner ponds of sedimentation of bush and exotic objects.
18	2,35	Drip irrigation system is used depending on the type of soil.
19	2,30	Use of drip irrigation system depending on the type of plant cultivated
20	2,20	Use of drip irrigation at high temperatures
21	2,14	Use of drip irrigation at low temperatures

the top three of items according to the application level of farmers are respectively (use of drip irrigation for all kinds of agricultural soils, use of drip irrigation in uneven lands, use of fertilizers and pesticides with drip irrigation water). This means that the farmers in the search area have information and knowledge in these items (questions) and topics related to the use of drip irrigation technology. The last three items, which came in the last order according to the application level of farmers, respectively (Use of drip irrigation at low temperatures, use of drip irrigation at high temperatures, use of drip irrigation system depending on the type of plant cultivated). This indicates that the respondents in the area of Rabia suffer from a lack of knowledge in these three topics above with regard to the use of agricultural extension recommendations in the technique of drip irrigation.

Third: Finding the correlation between the application level of agricultural extension

recommendations for drip irrigation technology by farmers and independent variables in this research (age, educational level, size of agricultural land, type of agricultural tenure, previous training):

1. Age: The highest age of the respondents was (84 years) and the age of (21 years) and an mean of (49 years). when distribution of respondents according to age categories.

The highest percentage was found in the middle category of (42-62) years, reaching (58%) of the total number of respondents. The results showed there was a significant positive correlation between age and application level by farmers of extension recommendations for drip irrigation technology, the simple correlation coefficient of Person is (0,708*), it was significant at the probability level (0.05). This means that the more farmer age increases, their application level for the recommendations of drip irrigation technology will increase also, as shown in table 3.

Educational Level: The distribution of respondents according to the categories of educational level shows, that the high percentage was in category of graduates of primary school. The results showed that there was no significant correlation between the education level of farmers and their application of extension recommendations for drip irrigation technology. The correlation coefficient of spearman is (0,02) it is no significant. This means that the education level has nothing to do with the application level of the extension recommendations for drip irrigation technology (as

shown in Table 4.

Size of agricultural land:

It was found that the highest size of agricultural land (60 dunums), and the smallest size is (4 dunums, an mean of (32 dunum). The distribution of the respondents according to the size of agricultural land shows that the high percentage was in the low category (4-22) dunums,

Table 3: The distribution of respondents according to their application level of recommendations for drip irrigation technology and its relationship with the age.

The value r	%	The number	Category of age (year)
0,708 *	26	13	Low (21-41)
	58	29	Medium (42-62)
	16	8	High (63- 84)
	100%	50	Sum

The mean (49 year)

Table 4: The distribution of respondents according to their application level of recommendations for drip irrigation technology and its relationship with the educational level.

The value rs	%	The No.	Category of educational level
0,02-	6	3	does not read and does not write
	20	10	Reading and writing
	24	12	graduate of primary school
	20	10	graduate of secondary school
	16	8	graduate of high school
	14	7	graduate of college
100	50	Sum	

Table 5: The distribution of respondents according to their level of application of the extension recommendations of drip irrigation technology and its relationship with the size of agricultural land.

The value r	%	The No.	Category of size of agricultural land (dunam)
0,893*	40	20	Low (4-22)
	32	16	Medium (23-41)
	28	14	High (42- 60)
	100	50	sum

The mean (43 dunum)

Table 6: The distribution of respondents according to their application level of the extension recommendations for drip irrigation technology and its relationship with the type of agricultural tenure

The value rs	%	The No.	Category of type of agricultural tenure
0,002	10	5	Ownership
	68	34	Contracting
	22	11	Rent
	100	50	sum

Table 7: The distribution of respondents according to their application level of extension recommendations of drip irrigation technology and its relationship with the previous training

The value rs	%	The No.	Category of previous training
0,007	28	14	trainee
	72	36	Not trainee
	100	100	sum

, Reaching 40%.

The results showed that there was a significant positive correlation between the size of agricultural land and the application level of farmers. The simple correlation

coefficient of Person (0.893*) was significant at the probability level (0,05), indicating that farmers who owns the high agricultural land, their application level will increases of recommendations for drip irrigation technology. This indicates that farmers in the(a high of size of agricultural land they have a high level of application of e extension recommendations for drip irrigation technology (as shown in Table 5).

Type of agricultural tenure:

The distribution of respondents according to the type of agricultural tenure, we found that the high percentage was in middle category, with (68%). Also, there was no significant correlation between the type of agricultural tenure and the application of farmers of recommendations for drip irrigation technology, where the correlation coefficient of Spearman (0, 002) which is not significant. This indicates that type of agricultural tenure has nothing to do with their application of the drip Irrigation guidelines (as shown in table 6).

Previous Training:

The percentage of non-trainees was high (72%), It was also found that there was no significant correlation between the previous training and the application level of farmers. Sperman's correlation coefficient was (0.007) insignificant. This indicates that the training has no relation to the application level of the drip irrigation guidance recommendations.

Conclusions

Based on the research results we conclude the following:

1. We conclude from the research that farmers in the Rabia distract apply the extension recommendations for drip irrigation technology in the medium tends to low, and they need to enhance their knowledge and knowledge in the use of guidance recommendations in the use the technology of drip irrigation.
2. We conclude from the research that the farmers in the Rabia distract have knowledge in the application of the following topics (use of drip irrigation for all kinds of agricultural soils, use of drip irrigation in uneven lands, use of fertilizers and pesticides with drip irrigation water).
3. We conclude from the results of the research also that farmers need to develop their knowledge in the subject (Use of drip irrigation at low temperatures, use of drip irrigation at high temperatures, use of drip irrigation system depending on the type of plant cultivated).
4. We conclude from the research that the variables (age, size of agricultural land) have a prominent role in the

development of the level of information of farmers in the implementation of guidance recommendations for drip irrigation technology.

5. We conclude from the research that the variables (educational level, type of farm tenure, previous training) has no role in the development of the information level of farmers in the application of the extension recommendations in the technology of drip irrigation.

Recommendations

Based on the conclusions, the researcher recommends

1. Work on raising the information of farmers in the Rabia district on the subject of the application of extension recommendations for drip irrigation technology in general.
2. Work on raising the information of farmers in the following topics:
(Use of drip irrigation at low temperatures, use of drip irrigation at high temperatures, use of drip irrigation system depending on the type of plant cultivated).
3. Conduct studies similar to this research in other parts of Iraq to identify the application level of extension recommendations for drip irrigation technology by farmers in these areas.

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