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Study the Factors Influencing on the Application of the Correct Methods in the Field of Conserve on the Water from Pollution for Farmers of Hammam Alalil District / Nineveh Governorate / Iraq

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Abstract: The aim of the current research is to define factors affecting application of correct methods to keep water unpolluted for farmers of Hammam Al-Aleel district ct / Nineveh governorate Iraq in general, herarchy of research items according to farmers application as well as know the correlation between applying correct methods to keep water clean for Hammam Al-Aleel farmers and independent variable of research. To get research data, a two – parts questionnaire was made. The first included personal and social information of farmers (age, academic achievement, area of land , property type) variables. Second part of questionnaire included (16) items of applying correct methods to keep water unpolluted. Each item got the following alternatives (apply greatly), moderately, rarely, never apply) with the grades (4 , 3 , 2 , 1) respectively. After writing the draft of questionnaire, it passed a panel of experts in agricultural guidance to verify (surface reliability). The same draft passed experts in water and to affirm (practical side) of items (i. e. content reliability). Data were collected during (June 2020). Research included all (1550) farmers of Hammam Al-Aleel . Out of this community, a simple (7 %) random sample was chosen. Final sample was 105 farmers. Results showed that farmers moderately applied correct methods to keep their water unpolluted. Results also showed that (age, area of land) variables have a moral correlation with degree of applying correct methods to keep water clean whereas (academic achievement, type of land property) variables didn't have moral relation to the application of the correct methods to keep water unpolluted. Farmers performed poorly in these items: (I don't wash animals in river, I don't clean car near rivers, I don't drop oil or it's deriviatives in rivers and irrigation canals).

Keywords: Correct methods, Pollution, Water, Agricultural guidance.

Introduction

Water is life, it is drinking source for human and animals a source for agriculture and industry. Our lives attached to water. Water is backbone of life and one of its key components. Living cell contains 50 – 60 % of its weight of water. A water is 70% of total weight of vegetables and rises into 90% for fruits. It is the key element of man's stability and flour is hment of civilization. Whenever there is water, there is life (Abdulinayen et al., 2019).

Inside human body, water has many functions besides drinking It disolvenutrients after digestion. Water is vital for blood, lymph spine liquids and other bodily liquids such as tears and sweat Scientists affirm the importance of water to man. Man can live without water for (60) days but not without water for more than a week. If body loses more than 20% of water, man is vulnerable.

Water resource are one of pillars of creating and developing societies. Oldest civilizations rose and flourished in basins of Egypt. China and Iraq. (Kamil et al 2012). Water is one of necessities of national economic security of

any country specially in dry or semi-dry regions. Iraq got desert areas with few rainfalls and underground water due to global climate changes that happens recently (Al-Lihibi et al., 2016; Jawdat et al., 2016).

Water importance lies in three main trends: life, reform and cultivate land, generate energy and technology, a chiere development and progress (Jonaidi, 2006). Plants contain large amounts of water that may trespass 95%. Animals also composed of (70%) of water. Despite water's importance for life, man pollute it by throwing pollutants in its source.

It's a common sense that water is important. It's one of most important natural resources that must be kept unpolluted and used rationally. Since dawn of history life is key of life and key factor of civilization (Iraqi Journal of agriculture, 2005). Pollution is defined as messing type of rivers , agricultural canals, seas, oceans as well as rains and underground water in a way that make them out of use. Water is polluted by throwing human, plant, animal, metal, industrial, agricultural or chemical wastes that go to water source (seas , oceans , rivers , canals). Unground water is polluted through penetrating chemical materials as well as with all its bacteria and micro – organisms (Nsayef , 2005).

WHO defines water pollution as " any change that occurs on natural biological, chemical proper ties of water making it undrinkable or for household, industrial or agricultural uses of water ". Irrigation specialists make continuous efforts to rationalize water use with the look for rivers suitable for agricultural production specially in dry regions where rains source of other water sources is scarce. (Amir, 2000; Shah et al., 2013).

Agricultural guidance plays an important role to educate farmers about all that is connected to irrigation, water uses and sewers. All this after the realize of currents century the scarcity of water , dequality of water after math of drought waves, raised salt levels in water gathering point as well as salt levels of soil (Dawood et al., 2020; Mossie et al., 2015).

Agricultural guidance effectively contributes in spreading modern agricultural methods whether in irrigation, plowing, stocking, marketing, fighting , or harvesting etc… Agricultural guidance increases knowledge, trends, realize and consciousness of farmers with these methods. Such studies show the ability of agricultural guidance to puss these skills, practices and new methods in a comprehensive and applicable way on the one hand. The result of these studies from the correct base of future agricultural guidance programs on the other hand (Dahash, 2016; Al-Tanoobi, 1996; Al- Zubaidi et al., 2018).

Since farmers use water homily to cultivate , to keep in mind importance of water and pollution, the researcher opted realizing the research in an agricultural area (Hammam Al-Aleel). Habitants of this region are mostly farmers and non – farmers use water heavily whether to farm or else. The aim is to know degree of applying the correct methods by farmers to keep their water clean in general as well as other research items.

Materials and Method

Researcher chose Hammam Al-Aleel region Nineveh governorate to do research, all (1550) farmers of the region wrer included. A simple random sample representing 7% of the community was chosen. So, the sample is (105) farmers. To gain required data, a questionnaire of two parts was made the first includes personal and social information about farmers such as (age , academic achievement, land area , type of land property). Second part includes (16) items regarding the application of correct methods to keep waters unpolluted. Application was measured through alternatives (apply greatly, moderately, rarely, never apply) with the grades for each alternative (4 , 3 , 2 , 1) respectively. After completing draft of questionnaire , it passed a panel of agricultural guidance experts to find surface reliability as well as another water and environment experts to verify scientific safety of items. Data were collected on June 2020. A pilot test of questionnaire happened with a sample of (30) farmers. The (30) persons weren't within final sample. Stability was found via partial division that scored (0.82) validity (0.90) , through stability factor's root. Data of pilot sample were gathered on June 2020.

Measuring Independent Variables and Dividing Categories

1– Age. Measured through years of researchers during data collecting. Every year was given one degree. Age variables categories were found by using actual range (highest value – lowest value) divided into three categories.

2– Academic achievement measured through the following alternatives (illiterate , reads and writes , primary, inter – mediate , secondary , graduate). Each level was ranked (0 , 1 , 2 , 3 , 4 , 5) respectively categories were (illiterate , reads and write , primary , intermediate secondary , graduate).

3 – Land area : measured by area of cultivated land. Every donum got 1 degree.

4– Type of land property : Measured through the following levels : estate contract , rental with the degrees (3 , 2 , 1) respectively .

Statistical Methods

1– Ratio : Used to describe researcher according to distribution over research variables.

Average : To describe research variables , measure application levels according to Al-Korashi (2005) .

$$X = \frac{-\sum X}{n}$$

Were

$\bar{x}$ = average

$\sum X$ = sum of digital value

n = number of samples

r = Person conjunction factor to calculate correlation factor between single and duet number of research. Stability of scale, independent variables indicators of the study was found via partial division as follows (Al-Bayyati , 2005).

r = Stability conjunction factor.

X = single items

Y = duet items

n = number of researches

4 – Spear man brown formula used to correct stability of scale indicators of independent variables calculated by partial division according to the following law (Al-Ashkar, 2010).

$\sum XX$ = estimated stability factor.

roe = value of correction factor between single and dual items.

Results and Discussion

Firstly: Define Factors Affecting Application of Correct Methods to Keep Water Unpolluted for Farmers of Hammam Al-Aleel in General.

Results showed that the highest theoretical numeral value of researches regarding applying correct methods to keep water unpolluted was (64) while the last was (16) with an average of (27.608). Researches were categorized into three levels about their application of scientific means to keep water unpolluted as shown in table (1).

Table 1. Categorizing researches according to their application of correct methods to keep water unpolluted in general.

Categories	Number	Ratio %
Low (16-31)	20	19
Moderate (32-47)	63	60
High (48-64)	22	21
Total	105	100%

Previous table shows that 60% of researches apply moderately the correct methods to keep water unpolluted those who highly apply correct methods were 21% , those who rarely apply those methods were 19%. Meaning that the level of applying correct methods to keep water unpolluted for farmers of Hammam Al-Aleel was moderated.

Secondly: Arranging Items of Research Due to Application by Farmers:

Table (2) shows arrangement of items according to level of application by farmers as well as the mathematical means for each item.

Table 2. Arranging of research items according to their level of application by farmers.

Items	Mean	Rank
Sanitize drinking water correctly.	4	1
Store drinking water correctly	3.24	2
Choose proper place to store drinking water	3.30	3
Avoid throw animal wastes in water	3.25	4
Avoid throw garbage in rivers and Creeks	3.13	5
I don't wash garbage containers with water	3.11	6
Avoid using water in animals' shelters.	3.08	7
I make sure that water is clean before use	3.02	8
I don't throw pesticide wastes in rivers and Creeks	2.89	9
I don't throw fertilizers wastes in rivers and Creeks	2.81	10
Avoid using plates used in pesticides in rivers and Creeks	2.79	11
Avoid throw sewers wastes in rivers and Creeks	2.71	12
Avoid throw poultry waste in rivers and Creeks	2.69	13
Avoid throw oil and derivatives in rivers and Creeks	2.55	14
I don't wash car near rivers	2.49	15
I don't wash animals in rivers	2.35	16

Previous table shows that top 3 items according to level of application by farmers are (sanitize drinking water correctly, store drinking water correctly, choose correct storage place to store drinking water), indicating that farmers of Hammam Al-Aleel have what it takes to implement these items above. Whereas bottom 3 items were avoid washing animals in rivers, avoid washing cars near rivers, avoid throwing oil and derivatives in rivers and Creeks). Respectively. This means that farmers lack information in these items that calls for more education.

Thirdly: Define Correction Between Level of Applying Correct Methods to Keep Water Unpolluted and Independent Variables of Research:

Table 3. Categorizing farmers according to their level of applying correct methods to keep water unpolluted and its relation to age variable.

Categories (year)	Number	Ratio %	Pearson correlation factor (r)	Spearman factor (rs)
Age				
Low (30-41)	30	28.57		
Medium (42-53)	60	57.15	**3.238	
High (54-65)	15	14.28		
Total	105	100%		
Academic Achievement level				
Illiterate	18	17.82		
Reads and writs	11	10.90		
Primary	19	14.85		
Intermediate	20	19.80		-0.030
Secondary school	28	27.72		
College	9	8.91		
Total	105	100%		
Cultivated of land Area				
Small (3-18)	44	41.90		
Middle (19-34)	30	28.57		
High (35-50)	31	29.53	**11.047	
	105	100%		
Type of land Area				
Estate	41	39.06		
Contract	40	38.09		
Rent	24	22.85		- 2.518
	105	100%		

Table (3) shows correction between level of applying correct methods to keep water unpolluted and independent variables of research.

Age

The eldest researchers were (65) years the youngest was (36) with as average of (48) years. When categorizing researches according to age , the highest rate was middle-aged group (42-53) years with 57.15% of total sample. There was a positive moral correlation between age variable and level of application. Pearson simple conjunction factor r (* 3.238) , positive at (0.05). Meaning the older researches is the more he applies correct ways to keep water unpolluted due to experience and knowledge gained within age. This result coincides with Al-Talib (2012) Al-Talib et al. (2012) as show in table (3).

Academic Achievement

When scheduling researchers on academic achievement, the secondary graduates were highest scoring 27.72% there wasn't a moral relation between academic achievement and application level. Rank correlation factors of spearman (0.030 -) immoral meaning that academic achievement of researchers is irrelevant to application level. This could be because farmers get information and knowledge about keeping water unpolluted from other sources than curricula this disagrees with Al-Talib (2012) and Al-Talib et al., (2011) as shown in table (3) .

Cultivated Land Area

The highest number was 50 Donums while the last was (3) with an average of (24) donums. By categorizing researches according to area of cultivated land there was a rise in owners of high cultivated lands (35-50) donuums reaching 29.53% there was a positive correlation factor between area of cultivated lands and level of application simple correlation factor of Pearson r (11.047*) moral at level of (0.05) meaning that farmer of high cultivated area applies greatly correct methods to keep water unpolluted (as shown in table (2) to utilize water in agricultural processes , cultivate lands and other uses.

Property Type

Viewing cauterization of researches according to type of land property, there is rise in land owners reaching 29.06%. No moral correlation between land property type and level of application. Spearman rank conjunction factor was (- 2.518) immoral meaning that type of land property is irrelevant to farmers applying correct methods to keep water unpolluted (as shown in table 3).

Conclusions

Got the above mentioned results the researcher concluded.
1 – Farmers in Hammam Al-Aleel apply correct methods to keep water unpolluted in a moderate level that tend to rise.
2 – (Age , land area) variables play prominent role in raise level of information of farmers to apply correct methods to keep water unpolluted.
3 – (Academic achievement , land property type) variables don't have any role in developing level of knowledge of farmers to achieve correct method of keeping water unpolluted.
4 – Farmers of Hammam Al-Aleel did poorly in the following variables (I don't wash animals in river , I don't clean car near river , I don't throw oil or its derivatives in rivers and Creeks).

Recommendations

Given the above results, the researcher recommends:

1 – Raise and enhance knowledge of farmers of Hmmam Al- Aleel regarding keeping water unpolluted in general through courses.

2 – Initiate similar studies in other Iraqi regions to know level of applying correct methods to keep water unpolluted by farmers.

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPHELS journal belongs to the author.

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