

The level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district - Salah Al-Din Governorate

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Abstract

The research aimed to identify the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district in Salah al-Din governorate in general, while determining the level of knowledge in the fields of water, air and soil pollution and ranking each field according to the level of knowledge and showing the relationship of this level to some personal and agricultural factors (age , number of years of pesticide use, trend towards environmental conservation)

The research community included all (461) rural women who own agricultural contracts in Ishaqi sub-district, and a proportionate random sample of (20%) was selected, amounting to (92) female respondents.

The questionnaire was prepared in two parts: the first for personal variables, and the second to measure the level of environmental knowledge, and included (50) paragraphs distributed over the areas of water, air and soil pollution

Use several statistical means such as arithmetic mean, standard deviation, correlation coefficients, and (t) test

The results showed that the level of knowledge of rural women in preserving the environment from pollution was medium and tended to be low, with the majority of respondents falling in the medium category, with lower percentages in the high and low categories. The results also showed a difference in the level of knowledge between the three areas of pollution, as some polluting agricultural practices were more clear to the respondents than others.

The researchers concluded that rural women in the research area need extension and training programs to enhance their environmental knowledge, particularly in the areas of air and soil pollution and some agricultural malpractices. The study recommended intensifying extension activities, strengthening the role of institutions concerned with environmental protection, and planning awareness programs targeting rural women to raise the level of environmental awareness and consolidate environmentally friendly agricultural behaviors.

Introduction and the problem of the study:

Agriculture is one of the main pillars in developing countries in general and rural populations in particular because of its effective role in achieving the welfare and progress of society. It also achieves food security for all countries, whether developed or developing, [10].

Rural development includes providing new inputs to agriculture such as fertilizers, pesticides and other inputs. Therefore, sustainable rural development addresses more than one sector, not only agriculture, but also the environment, health, energy, water and other sectors [7].

Since the basic goal of sustainable development is to meet the economic needs of the current generation without weakening the ability of future generations to meet their needs, it requires protecting the environment from pollution and preserving its vitality [8]. This requires the efficient management of resources in order to meet the constantly changing human needs as well as the maintenance and improvement of natural and environmental resources and to maintain their safety by achieving a balance in the use of available capabilities and preserving the environment from pollution of the environment by water, air and soil [1].

Accordingly, environmental problems have become a serious phenomenon that calls for caution and attention, not only in urban environments, but also in rural environments, which are experiencing faster rates of degradation and destruction than in the recent past [9]. Humans are the most influential factor in environmental changes and natural imbalances in the ecosystem. Global studies suggest that modern humans have sought to meet their needs using available technical means, disrupting ecosystems locally and globally, depleting

resources, accumulating waste and increasing environmental pollution [6].

The role of agricultural extension has become essential and vital in the field of spreading and consolidating environmental awareness among farmers, introducing them to the causes of pollution and how to preserve the environment, providing farmers with the knowledge and skills necessary to adopt environmentally friendly agricultural practices, as well as raising awareness of the importance of preserving natural resources such as water and soil and not wasting them, encouraging the adoption of sustainable agricultural practices that take into account environmental aspects, and promoting organic agriculture and environmentally friendly agricultural methods [9]. Since environmental pollution is primarily a behavioral problem carried out by members of society, it is important to measure the level of environmental knowledge among various segments of society, and then develop appropriate guidance and awareness programs for each sector [4]. Since rural women have a great role in agricultural operations in Ishaqi sub-district, it has become necessary to know the level of knowledge of rural women in preserving the environment from pollution in the research area. Hence, the idea of conducting this research by answering the following research questions.

1-The level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district/Salah al-Din governorate in general?

2- What is the descending order of the paragraphs of each field according to the level of knowledge of the subjects in preserving the environment from pollution?

3- What is the correlation between the level of knowledge of rural women in preserving the environment from pollution in Ishaqi

sub-district/Salah al-Din governorate and each of the following factors (age, number of years of pesticide use, number of years of chemical fertilizer use, and the trend towards preserving the environment) ?

Research Objectives:

1. Determine the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district in Salah al-Din governorate in general.
- 2- Determining the level of knowledge of rural women in Ishaqi sub-district/Salah Al-Din governorate in each field of study in preserving the environment from pollution, represented in (water pollution, air pollution, soil pollution)
- 3- Sorting the paragraphs of each field in descending order according to the level of knowledge of the subjects in preserving the environment from pollution.
4. Determine the correlation between the cognitive level of rural women in preserving the environment from pollution in Ishaqi sub-district/Salah al-Din governorate and each of the following factors (age, number of years of pesticide use, number of years of chemical fertilizer use, and the trend towards preserving the environment).

Statistical Hypotheses:

- 1- There is no significant correlation between the level of knowledge of rural women in the preservation of the environment in Ishaqi sub-district – Salah al-Din Governorate and age.
- 2- There is no significant correlation between the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district – Salah al-Din governorate and the number of years of pesticide use .
- 3- There is no significant correlation between the level of knowledge of rural

Population and Sample of the Study:

women in environmental conservation in Ishaqi sub-district – Salah al-Din governorate and the number of years of using chemical fertilizers.

4-There is no significant correlation between the level of knowledge of rural women in preserving the environment from pollution from pollution in Ishaqi sub-district – Salah al-Din governorate and the trend towards preserving the environment.

Procedural Definitions

1. Knowledge level: The amount of information among rural women in Ishaqi sub-district/Salah al-Din governorate in the field of preserving the environment from pollution.
2. Environment :It is the ocean that lives in humans and other living organisms and includes the natural elements of water, air and soil .
3. Environmental preservation: It is the protection of the environment from any substances that change the physical, chemical or biological properties of all or some components of the environment , such as air, water or soil .

Materials and methods

Methodology:

This study relied on the descriptive approach as this approach is appropriate in reaching detailed information, data and facts about the needs of the target at a certain time (Al-Asadi , 2008: 51). This approach is characterized by monitoring and following a phenomenon or event accurately, in a quantitative and qualitative way in a certain period of time, or for several periods of time, in order to reach results that help in understanding the present and predicting the future. (Dashley ,2016 :61).

The study community included all rural women in Ishaqi sub-district, who owned agricultural contracts, and they numbered (461) women. A survey sample of (30) women was selected. The final research Table (1): study Research population and sample

sample was selected in a proportionate random manner by (20%), so the number of respondents subject to the research procedure is (92) as shown in Table (1).

T	municipality	Macro-society	Exploratory Sample	Research Sample
1	Farhatiyah	114	7	23
2	Al-Jazeera	246	17	49
3	Wells	101	6	20
	Total	461	30	92

Preparation of the questionnaire form:

The questionnaire form was prepared in its initial form by reviewing the scientific sources and previous studies related to the subject of environment and environmental pollution. The form consisted of two parts, the first part of which included a set of questions related to the personal aspect of the respondents (age , number of years of using pesticides , number of years of using

chemical fertilizers, and the trend towards preserving the environment). The second part included a measure to measure the level of knowledge of rural women in preserving the environment from pollution consisting of (53) questions that are answered with (yes or no) divided into three main areas related to the field of environmental pollution as shown in Table (2).

Table (2) Distribution of research paragraphs by fields

T	Area	Number of paragraphs
1	water pollution	14
2	Air pollution	19
3	Soil pollution	20
	Total	53

Validity of the scale:

The apparent validity was verified by presenting the scale to specialists in agricultural extension and psychology and the validity of the content by presenting it to

a number of environmental specialists, including teachers of the Faculty of Agriculture, Environmental Engineering, Life Sciences, Environmental Sciences and

Technologies, and specialized employees in the Ministry of Environment. The wording of some paragraphs was modified and no paragraph was deleted . The scale remained in its initial form, containing (53) questions distributed among the research fields.

Level of knowledge.

The level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district was measured through (50) questions, each of which represents information about environmental pollution in the light of its own field. Scores were distributed to the fields and alternatives were placed in front of each paragraph (yes ,no). The values were given (0) for the wrong answer and (1) for the correct answer, so the total scale scores range between (0 - 50) degrees.

- **Statistical means:** For the purpose of reaching the objectives of the research, a

number of statistical means were used, including:

- 1- Range, myaverage, standard deviation , rank correlation coefficient, simple correlation coefficient (Pearson), and test (t).

Results and Discussion

First Objective: Determine the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district – Salah Al-Din Governorate

The results showed that the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district – Salah al-Din Governorate in general ranged between (17-32) degrees with an overall average of (24.17) and a standard deviation of (3.08). The respondents were divided into three categories using the range and the results were as in the table (3)

Table (3) Distribution of rural women by level of knowledge Preserving the environment from pollution

Categories	Nos	Percentage	Average knowledge
Low (17-21)	20	21.74	19.78
Medium (22 - 26)	54	58.70	24.39
High (27 - above)	18	19.56	28.40
Total	92	100	

Table () shows that the average level of knowledge of rural women reached 58.70%, while the low category reached 21.74%, while the high category reached 19.56%, which means that the level of knowledge of rural women in general tends to decrease. This may be due to the low exposure of rural

women to extension activities in the field of preserving the environment from pollution and the lack of sources of access to information about the environment, as well as focusing on short-term productivity at the expense of long-term environmental sustainability.

The Second Objective: Order the paragraphs of each field of study in descending order:

First : Ranking the paragraphs in the field of water pollution in descending order .

The water field pollution paragraphs were arranged in descending order according to the arithmetic mean and the results were as in the table - - -.

Table(4)Ranking the paragraphs of the field of water pollution in descending order

T	Paragraph	average	Rank
1.	Washing pesticide containers in the water of rivers and waterwaters due to water pollution	0.82	1.
2	Reducing the use of chemical fertilizers causes water pollution	0.64	2
3	Excessive addition of organic fertilizers leads to increased water pollution	0.61	3
4	Sediments and anaerobic decompositions do not cause sewage contamination	0.60	4
5	Throwing excess pesticides into rivers and waterways causes water pollution	0.50	5.5
6	Drainage of wastewater to rivers before treatment causes pollution of river water	0.50	5.5
7	Heavy metals such as lead, copper and iron do not cause wastewater pollution	0.41	7
8	Sediments and anaerobic decompositions do not cause sewage contamination	0.40	8.5
9	Excessive use of nitrogen fertilizers causes groundwater contamination with nitrates	0.40	8.5
10	The leakage of sewage and sewage into groundwater causes its pollution	0.38	11
11	Increasing chemical fertilizers increases algae growth and water pollution	0.38	11
12	Adding chemical fertilizer to rivers causes pollution of their water	0.38	11
13	Increasing the value of the organic carbon uptake coefficient increases the likelihood of surface water contamination with pesticides	0.37	13
14	Adding chemical pesticides to well water causes water pollution	0.33	14

Extreme value

It is clear from the table - - that the paragraph (washing pesticide pots in river water and watercourses causes water pollution) ranked first, and the reason may be that adding agricultural pesticides to water changes its color to white, similar to milk, which makes its impact clear on water, while the paragraph (adding chemical pesticides to well water causes water pollution) came last, and the reason may be

that the respondents did not see the impact of adding chemical pesticides to well water and watching the change in water color, which causes the lack of knowledge of their impact on well water pollution.

Second: Ranking the paragraphs of the field of air pollution in descending order .

The paragraphs of the air pollution field were arranged descendingly according to the arithmetic mean and the results were as in the table (5)

Table (6) Air Pollution Field Paragraphs in Descending Order

T	Paragraph	average	Rank
1.	Using solar energy to run irrigation pumps causes air pollution	0.69	1.
2	The use of pesticides with spray irrigation does not cause air pollution	65	2
3	Selection of disease-resistant crop varieties leads to air pollution	6-3	3
4	Landfilling of dead animals produces gases that cause air pollution	58	4
5	Using diesel-powered irrigation pumps keeps the air from diesel	0.53	5
6	Storing agricultural pesticides in indoor places keeps the air from contamination	0.52	6
7	Pesticide spraying when high winds cause air pollution with pesticides	0.51	7.5
8	Growing windbreaks in open land causes air pollution	0.51	7.5
9	Leaving animal dung in barns keeps the air from getting polluted	0.50	9
10	Using electric irrigation pumps increases air pollution	0.47	11
11	Raising animals in overcrowded barns causes air pollution with methane gas	0.47	11
12	Open burning of animal waste causes air pollution	0.47	11
13	Reducing the movement of agricultural machinery in the fields reduces air pollution	0.46	13
14	Establishing poultry fields outside sanitary controls causes air pollution	0.45	14
15	Marginal land cultivation causes air pollution	0.42	15
16	Mixing pesticides in one container when combating causes the	0.40	16

	generation of air pollution gases		
17	Overgrazing causes devegetation and air pollution with dust	36	17
18	Burning agricultural crop residues in the field makes the air polluted	0.28	18
19	Burning empty pesticide containers in incinerators causes air pollution	27	19

Extreme value

It is clear from the table - - that the paragraph (the use of solar energy to operate irrigation pumps causes air pollution) ranked first, and the reason may be the observation of smoke and exhaust from diesel pumps and the clarity of their impact on the air, while no air pollutants were seen when using solar energy to operate irrigation pumps.

While the paragraph (burning empty pesticide containers in incinerators that

Table (6) Soil Pollution Area Paragraphs in Descending Order

cause air pollution) came last, and the reason may be that this method is not used to dispose of empty pesticide containers in the search area.

Third : Arrange the paragraphs of the field of soil pollution in descending order .

The paragraphs in the field of soil pollution were arranged in descending order according to the arithmetic mean and the results were as in the table (6)

Speciality	Paragraph	average	Rank
1.	The use of biological control instead of chemical control causes soil pollution	0.73	1.
2	Intensive crop cultivation keeps soil from contamination	0.68	2
3	Adherence to the recommended concentrations in chemical control causes soil pollution	6-3	3
4	The use of chemical pesticides that affect the activity of microorganisms in the soil keeps the soil from contamination	0.59	4
5	Excessive use of chemical fertilizers leads to soil contamination	0.57	5
6	The use of the evaporation system for agricultural land causes its pollution	0.56	6
7	Landfilling of undecomposed animal waste under the surface of the soil causes pollution	0.53	7
8	Landfilling of undecomposed animal waste under the surface of the soil causes pollution	8.	8
9	Leaving animal waste on the soil turns it into nitrates that cause soil	0.44	9.5

	pollution		
10	Increased chemical fertilizers sometimes cause soil pollution	0.44	9.5
11	The use of chemical pesticides that affect the activity of microorganisms in the soil keeps the soil from contamination	0.41	11
12	Leaving dead animals on the surface of the earth causes soil pollution	0.40	12
13	The use of fertilizers that affect soil acidification causes soil contamination	0.39	14
14	Increased nitrogen leads to an increase in the number of harmful bacteria in the soil and their pollution	0.39	14
15	Using organic fertilizers instead of chemical fertilizers keeps the soil from contamination	0.39	14
16	Discharging expired pesticides on the surface of the ground keeps the soil from contamination	0.33	16
17	Collecting crop residues from the field keeps the soil from contamination	0.32	17

Extreme value

It is clear from the table - - that the paragraph (the use of biological control instead of chemical control causes soil pollution) ranked first, and the reason may be the knowledge of the respondents that the addition of pesticides to the soil increases the accumulation of chemicals in the soil, while the paragraph (the collection of crop residues from the field preserves the soil from pollution) ranked last, and the reason may be that the respondents collect crop residues after the end of the season to benefit from them as animal feed or use them in other areas, so rural women do not

consider agricultural residues as soil pollutants.

Third Objective: Determine the correlation between the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district - Salah al-Din Governorate according to the following studied factors:

1. Age

The ages of the respondents were limited to (30-65) years. They were divided according to the extent and length of the category into three categories. The results were as in the table (7)

Table (7) Distribution of respondents by age

Category	Nos	Percentage	Average knowledge	We know the value of r.	t-value Calculated
Young women (30 - 41) years old	16	17.40	24.93	0:23	2.25
Age Range (42 - 53 years)	38	41.30	24-61		
Older women (54-65 years)	38	41.30	42		
Total	92	100			

*Indicates that the relationship is moral at (0.05)

It is clear from the table - - that 44.57% of the respondents had their age within the category of average age, which is the highest percentage followed by the category of older women by 35.87%. As for the category of young women, the lowest number by 19.56%. To find the correlation between the level of knowledge of rural women and age, the Pearson correlation coefficient was used, which was 0.23. To test the significance of the correlation between the two variables, the (t) test was used. The calculated value of (t) was (2.242), which indicates a significant correlation between the two variables at the level of (0.05). Thus, we reject the statistical hypothesis that states (There is no significant correlation. Between the level of knowledge of rural women in preserving the

environment from pollution in the Ishaqi sub-district (Salah al-Din and the age). This may be due to the ability of young women to access information sources and follow the Internet and social networking sites about the causes of pollution and ways to preserve the environment from pollution, which increases their knowledge more than older women. This finding is consistent with the study of (Al-Hafiz,2005: 51).

2. Number of years of pesticide use:

The values expressed in the number of years of the pesticides were between (9-24) years, which were divided according to the range into three categories, and the results were as in the table (8)

Table (8) Distribution of respondents by number of years of pesticide use

Category	Nos	%	Average knowledge	We know the value of r.	t-value Calculated
Short (9 - 13) years	27	29.34	23.44	0.25	2.45
Medium (14-18 years)	49	A/53/26	27		
Long (19 +) years	16	17.40	25.12		
Total	92	100			

* * Indicates that the relationship is moral at the level of (0.01)

It is clear from the table (8) that 53.26% of the respondents are from an average category, which is the highest percentage followed by a short category (30.43%), while a long category (17.39%) is the lowest category. To find the correlation between the level of knowledge of rural women and the number of years of pesticide use, a Pearson correlation coefficient was used, which was 0.25. To test the significance of the relationship, a test (t) was used, where the calculated value of (t) was (2.436). It indicates that there is a significant correlation between the two variables at the level of (0.01). Thus, we reject the statistical hypothesis that (there is no

significant correlation between the level of knowledge of rural women in preserving the environment from pollution in the area of Ishaqi / Salah al-Din and the number of years of pesticide use). The reason may be that the respondents who use pesticides for a long time have experience in the damage caused by pesticides to the environment.

3. Number of years of chemical fertilizer use:

The values were limited to the number of years of pesticide respondents between (9-31) years, which were divided according to the range into three categories and the results were as in the table (9) .

Table (9) Distribution of respondents by number of years of pesticide use

Category	Nos	%	Average knowledge	We know the value of r.	t-value
Short (9 - 16) years	33	35.87	23.63	0.16	1.54 Ghain No.
Medium (17-24 years)	48	52.17	3.0		
Long (25 – 32) years	11	96	23		
Total	92	100			

It is clear from the table () that 7.52.1% of the respondents are from an average category, which is the highest percentage followed by a short category of 35.86% and a long category of 11.95%, which is the lowest percentage. To find the correlation between the level of knowledge of rural women and the number of years of using chemical fertilizers, use the Pearson coefficient, which was 0.16. To test the significance of the relationship between the two variables, use the test (t), where the calculated value of (t) was (1.54), which indicates that there is no significant correlation between the two variables. Thus,

we accept the statistical hypothesis that (there is no significant correlation between the level of knowledge of rural women in preserving the environment from pollution in Ishaqi /Salah al-Din sub-district and the number of years of using chemical fertilizers).

4. The trend towards preserving the environment:

The values expressing the trend towards preserving the environment were limited between (9-20) and the respondents were divided into three categories according to the law of the range(10)

Table(10) Representing Attitudes Toward Environmental Conservation

Category	Nos	Percentage	Average knowledge	r s	Calculated T value
9-12	11	96	22.45	0.24	2.34
Neutral (13 - 16)	64	56	28		
Positive (17-20)	17	18.48	24		
Total	92	100			

*Indicates that the correlation relationship is significant at the level of (0.05)

It is clear from the table () that 69.56% of the respondents were within the neutral category, which is the highest percentage followed by the positive category by 18.48%. The negative category is the lowest percentage of 11.96%. To find the correlation between the level of knowledge of the respondents and the trend towards preserving the environment from pollution, the Spearman correlation coefficient was used, which was (0.24). To test the significance of the correlation between the two variables, the t-test was used, which was (2.34). It indicates that there is a significant correlation between the two variables at the level of (0.05). Thus, we reject the statistical hypothesis that (there is no significant correlation between the level of knowledge of rural women in preserving the environment from pollution in Ishaqi /Salah al-Din governorate and the trend towards preserving the environment). The reason may be that rural women who have a positive trend try to know the causes of environmental pollution and avoid all agricultural practices that cause environmental pollution.

Conclusions:

1

- The results of the study showed that the level of knowledge of rural women in preserving the environment from pollution in Ishaqi sub-district/Salah al-Din governorate is medium, which tends to decline, and we conclude from this the need of the respondents in the research area for guidance programs and training courses related to their content in polluting the environment with its main components, soil air water and ways to preserve it from pollution.

2. The results showed that rural women have little knowledge of the harms of overgrazing on environmental pollution. From this, we conclude that rural women need extension activities in the field of pastoral extension.

Recommendations:

1

. Intensify extension activities in the research area to provide rural women with knowledge about the environment and ways to preserve it from pollution.

2. Strengthening the role of rural institutions concerned with environmental protection, in coordination with the Agricultural Extension Authority, to spread environmental awareness among the rural population.

3- Planning extension programs by the Ishaqi Agriculture Division aimed at raising the

3- The results of the study showed a significant correlation between the level of knowledge of rural women and the independent factors for women (age, number of years of pesticide use, and the trend towards preserving the environment). We conclude from this the importance of these factors and must be taken into account when developing various extension programs.

4. The results showed that more than half of the respondents are in a neutral category in the trend towards preserving the environment from pollution. We conclude from this the need for extension activities to crystallize the trends of rural women in the research area and make them feel the importance of preserving the environment from pollution.

knowledge of rural women, especially in areas and paragraphs where their information is less.

4. Implementing guidance campaigns in the research area to include the largest number of rural women in that area, including lectures, seminars and field explanations on the environment and the effects of pollution on the environment.

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