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Evaluation Farmers' Knowledge Level Regarding Practices of Sustainable Agriculture Development in Baghdad Governorate

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ABSTRACT

This study was designed to assess farmers' knowledge level regarding practices of sustainable agriculture development in Baghdad Governorate. Comparing between fields which they were as: water security, production inputs provision, environment protection, soil surface protection. Present study was conducted in Abu-Ghraib & Mahmudiya division, sample size defined as 133 respondents farmers from six selected villages were interviewed for information by questioner consist of sixteen test paragraph . Findings reveal that farmers possesses highest knowledge level of the paragraph "drip irrigation technology save more water as compared to other method of irrigation". at rates 4.70 ± 0.4 whereas they had least knowledge about of two paragraph" protection wildlife" and " production of Alsailj& Hay as feed of animals." at rates 0.5, 0.5 ± 0.09 ± 0.03 respectively . While farmers possesses highest knowledge level of field Water security at rate 2.98 whereas they had the least knowledge field Protection of the environment at rates 1.30 ,our recommendation is to build programs to meet the needs of sustainable agriculture development practices knowledge of framers and giving farmers the opportunity to participate in the planning, implementation and evaluation.

Keyword: sustainable agriculture development, water security, production inputs provision, environment protection, soil surface protection.

تقييم المستوى المعرفي لفلاحي محافظة بغداد بالممارسات المتعلقة بالتنمية الزراعية المستدامة

الخلاصة

تهدف الدراسة الى تقييم المستوى المعرفي لفلاحي محافظة بغداد بالممارسات المتعلقة بالتنمية الرزارعية المستدامة. حيث تمت المقارنة بين اربعة مجالات وهي الامن المائي، تجهيز المستلزمات الزراعية، حماية البيئة ، حماية التربة. اجريت الدراسة في كل من شعبتي زراعة ابو غريب والمحمودية، واختيرت عينة من 133 من الفلاحين اختيروا عشوائيا من ستة قرى، واستخدمت الاستبانة كوسيلة للحصول على البيانات اللازمة من المبحوثين ، واظهرت نتائج التحليل الاحصائي ان الفلاحين المستجوبين يملكون اعلى مستوى من المعلومات تجاه فقرة"الري بالتنقيط اكثر كفاءة بتوفير مياه الري مقارنة بطرق الري الاخرى" بمعدل 0.4 ± 4.70 بينما حصلت فقرتي "حماية

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الاحياء البرية" و " انتاج السايلج والدريس كعلف للحيوانات "اقل مستوى معرفي بمعدلات 0.5 ± 0.09 ، 0.5 ±0.03بالتتابع، كما بينت الدراسة ان اعلى مستوى معرفي يملكه الفلاحين المستجيبين تجاه مجالات الدراسة كان مجال الامن المائي بمعدل 2.98 بينما اقل مستوى معرفي كان مجال حماية البيئة بمعدل 1.30، توصي الدراسه الى اهمية بناء برامج ارشادية لسد النقص بالممارسات المتعلقة بالتنمية الزراعية المستدامة مع ضرورة مشاركة الفلاحين بالتخطيط وتنفيذ وتقييم هذه البرامج الارشادية .

INTRODUCTION

Food production systems that emphasized high yields have been remarkably effective in making any country agriculture one of the most productive systems in the world but this impressive productivity may be offset, however, by dependence on pesticides and synthetic fertilizers, soil erosion, surface and groundwater contamination, pesticide residues, Soil erosion, and wildlife habitat, and food safety. The public has reacted strongly to reports of water and food contaminated by agricultural practices, concerns for the health of people who live and work around pesticides, and reports of depletion of our natural resources, including soil, water, forests, wetlands, and native prairies [1,2]. Specialists from the agricultural extension have estimated the U.S. cost of these negative effects above ((wildlife, natural resources (land and water), human health and biodiversity)) 17 billion dollars, which called for a claim diet is safe and high quality without damage of excessive environment. Since the 198Os, attention has been given to developing sustainable agriculture systems [3].

Today, sustainable agricultural development (SAD)has become a significant issue in Iraq and internationally. Traditional agricultural systems that focused on economic goals are now tempered by human needs and environmental issues [4]. There is a growing awareness that agricultural systems must provide what the human family will require a decade or even a century from now [5]. So (SAD) should be incorporated into new improved family health, healthier livestock, improved soil conditions, and improved environmental conditions [6,7].

Strategies of Iraqi agriculture ministry for increasing agricultural production will have to focus on using available natural resources more efficiently, effectively and sustainably than in the past, some examples of these (SAD) practices which small number of farmers are using Pare: crop rotation, Integrated pest management, Integrated management of soil fertility , plant nutrients tillage practices and animal health maintenance [8,9,10]. (SAD) is an equitable, empowering, environmentally sound and economically viable process of growth, it relies on three primary goals: 1- Providing a more profitable farm income, 2- Promoting environmental stewardship, including: (protecting and improving soil quality, reducing dependence on non-

renewable resources, such as fuel , synthetic fertilizers and pesticides) 3- Minimizing adverse impacts on safety, wildlife, water quality, other environmental resources and promoting stable prosperous farm families and communities [11,12].

To achieve these goals above it must used effective of these following: biological control, integrated rationalization of irrigation water, manufacturing organic fertilizer (animal and plant), promotion of environmental economics, linked agricultural sector with industry, development new resources [13,14].

In Iraq the intensive using of chemical (fertilizers, pesticides, growth regulators, wasteful use of water and deforestation) causes deterioration natural resources and environment, which calls for a (SAD) practices lead to increase agricultural production without harming natural resources and this requires development knowledge of (SAD) practices, so extension agents must work heavily in education and training the farmers on (SAD) practices non-harmful environment and manage their farms with environmental preservation [15,16,17]. Iraqi extensional policy must be in a good relationship between agricultural production systems with natural resources, which confirm the need to build programs of (SAD) practices, the core of this research was evaluation knowledge farmers in Iraq regarding (SAD) practices.

Objective of this research:

The general aim of the study was to determine level of farmers knowledge regarding (SAD) practices in governorate of Baghdad, the specific objectives of the study were to:

1- Determine the paragraphs importance by respondents farmers in governorate Baghdad regarding (SAD) practices.

2- Determine the fields importance by respondents farmers in governorate of Baghdad regarding (SAD) practices.

Procedural definitions:

Sustainable agricultural development (SAD) is successful management of resources to meet human needs, with maintaining and improving the environment and natural resources by limiting use fertilizers or pesticides and replace them with natural ways.

Method:

Society and the research sample.

A - The research community included,(which used the descriptive method) all farmers in (15) agriculture division which belong to agriculture department of Baghdad governorate, as follow: (Nahrawan, Almadain, Mahmudiya, Latifiya, Yusufiya, Alrasheed, Kadhimiya,Alestklal,Baghdad center(Alresafa), Baghdad center(Kark), Abu Ghraib , Alnaser and Alsalam,Tarmiyah, Almshahda) they were chosen a random sample from these divisions in actually 15%, thus the research sample fell on two divisions which are: AbuGhraib& Mahmudiya.

B – Sample of 15% was selected of total counties (23) from AbuGhraib& Mahmudiya divisions. Sample of total counties were selected randomly proportional at totaling 6 provinces, divided by Agriculture Abu Ghraib, Mahmudiya respectively as shown in table (1):

Table(1) distribution of research sample of two division (Abu- Ghraib& Mahmudiya)

No	Division	Counties	No.Total farmers	No. samples Farmers
1	Abu Ghraib	Abady	185	28
		Smealat&sadan	112	17
		Aeishea	102	15
Total			399	60
2	Mahmudiya	Old Mahmudiya	150	22
		Am alresas	75	11
		Almjwalea	317	48
Total			542	80
Average total			941	140

2. Data collection tool:

Questioner Was adopted as a means of collecting data. which composed of sixteen paragraph test to assess level of farmers knowledge regarding sustainable agricultural practices, these paragraphs were distributed on four fields as following:

1- Water security field (4 paragraphs). 2 - Production inputs provision field (4 paragraphs).

3 – Environment protection field (4 paragraphs). 4 - Soil surface protection field(4 paragraphs).

In front of each paragraph placed five alternatives: (very much important, much important, moderately important, importance of a low degree, a very low importance) to show the importance of paragraphs, their weights as following (5,4 , 3, 2,1) sequentially, the highest possible value can be obtained by the respondent is (80) degrees and the lowest value is (16) degrees.

Validity were conducted by the experts and specialists from extension and agricultural education in the agriculture college of Baghdad, by their opinions, it have been making some necessary adjustments to the questionnaire (14).

(Pre-test) was performed of the questionnaire in the Almshahda division on 9/1/2012 until 15/2/2012 interview was done on (30) farmers where questionnaires were delivered and discussed.

3. The style of data collection

the personal interview was using as a way to collect data on the questionnaire, data collected on 1/4/2012 through periodic visits to each of the division of Abu Ghraib&Mahmodia , number of questionnaires which were subject to scientific research 133 form and by 95%, process of collecting information ended on 5/6 2012.

Statistical methods:

Statistical methods were used : percentage, arithmetic mean, standard deviation, Pearson correlation coefficient [15].

Results and Discussion:

First- Importance of sustainable agriculture development practices paragraphs by respondents farmers in Baghdad and descending order.

Each respondent was asked to show his opinion about the importance of the paragraphs regarding sustainable agriculture development practices. Five-point scale was used (l= a very low importance, 2= importance of a low degree, 3=moderately important, 4=much important, 5= very much important) to measure the paragraphs importance.

Results showed the importance level of all paragraphs ranged from being avery low importance to very much important, the less numeric value of the rates (0.50) paragraph (16) and the highest value (4.70) of paragraph (1) As in Table(2):

Table(2) weighted average (X) and standard deviations(SD) of paragraphs importance by respondent's farmers in (Abu- Ghraib& Mahmudiya) regarding knowledge level (SAD) practices and a descending order

No	Paragraphs	X	descending order	SD ±
1	Drip irrigation technology save more water as compared to other method of irrigation.	4.70	1	0.4
2	Organic matter is essential for maintaining soil fertility and improve water holding capacity of soil.	4.65	2	0.3
3	Local seed bank means using local and adapted seeds in the agriculture.	4.50	3.5	0.45
4	Using crop rotations to improve soil fertility and pest control.	4.50	3.5	0.73
5	Protection of groundwater.	2.52	5	0.65
6	Take advantage of treated waste water in agriculture projects	2.44	6	0.7
7	Windbreaks tree-planting.	2.34	7	0.73
8	Rain water harvesting to use it in the summer.	2.26	8	0.81
9	Focused green fodder production.	2.11	9	0.75
10	Applying mulches (black polyethylene) on the surface of the soil is essential to improve soil property	2.02	10	0.74
11	Integrated biological Control by using natural enemies and biological control to fight major insect pests).	1.25	11	0.81
12	Organic fertilizer production(plant or animal).	1.10	12	0.67
13	Crop residue must not be burnt but composted for Manuring.	1.09	13	0.4
14	Cultivation of mixed crops reduce soil erosion.	0.65	14	0.8
15	protection of wildlife.	0.50	15.5	0.09
16	production of Alsailj& Hay as feed of animals.	0.50	15.5	0.03

Very much important = 5, much important = 4, moderately=3, important of a low degree = 2, a very low important = 1. X = weighted average: 2.32. SD= standard deviation: 1.51. N = 133.

The data in table (2) shows the means and standard deviations of paragraphs perceived by farmers for sustainable agriculture development practices. The top four paragraphs came in (group of very much important).

These practices that respondents perceived from (SAD) practices were (Drip irrigation technology save the water as compared to other method of irrigation, Organic matter is essential for maintaining soil fertility and improve water holding capacity of soil, Local seed bank means using local and adapted seed in the agriculture, Using crop rotations to improve soil fertility and pest control) This indicates those farmers have a strong knowledge, because these practices contribute to increase agricultural production and improve food security of farmers. While one paragraph (Protection of groundwater) came in the group of moderately important. The paragraphs that came in the group of low important were (Take advantage of treated waste water in agriculture projects, Windbreaks tree-planting, rain water harvesting to use it in the summer, Focused green fodder production, Applying mulches (black polyethylene) on the surface of the soil is essential to improve soil property, Integrated biological Control by using natural enemies and biological control to fight major insect pests), the reason of low importance may be duo to that a limited number of respondents could learn practices for maintaining and improving using water, pest control and the soil's fertility[18] [19]. On the other hand, six paragraphs came in (group of very low important) in the most lower ranking were ((Organic fertilizer production (plant or animal), Organic Farming is agriculture without any addition of chemicals, Cultivation of mixed crops reduce soil erosion, protection of wildlife, Alsailj& Hay production as feed of animals.)) the reason of these low values may be that farmers knew very little about these beneficial practices because perhaps there were no integrated management programs for crop production in the study areas sponsored by government extension department so programs are needed to help farmers understand the new practices and their applications in various farming systems. Curriculum materials, instructional aides, and innovative approaches to teaching[14] [20].

Second. Importance Attached by Respondents to Fields and Descending Order of The Fields and Paragraphs .

When calculating the weighted averages of the importance of paragraphs according to their respective fields, the degree of importance was from moderately to low degree for all fields according to the user scaling, fields and paragraphs has been arranged by decreasing the importance of the weighted averages as table (3):

Table (3): fields importance & paragraphs& decreasing rates weighted by the answers of respondents farmers according to (SAD) practices.

No	Field	Paragraphs	X
1	Water security	1 - Drip irrigation technology save the water as compared to other method of irrigation. 2 –protection of groundwater. 3-Take advantage of treated waste water in agriculture projects. 4 - Rain water harvesting to use it in the summer.	4.70 2.52 2.44 2.26
	Weighted average		2.98
Relative importance of the weighted average75%			
2	Protection of soil	1 - Organic matter essential for maintaining soil fertility and improve water holding capacity of soil. 2 - Using crop rotations to improve soil fertility and pest control. 3 - Applying mulches (black polyethylene) on the surface of the soil is essential to improve soil property. 4 -Cultivation of mixed crops reduce soil erosion.	4.65 4.50 2.02 0.65
	Weighted average		2.96
Relative importance of the weighted average74%			
3	Provider of production inputs	1 - Local seed bank means using local and adapted seed in the agriculture. 2 - Focused green fodder production. 3 - Organic fertilizer production (plant or animal). 4 - Alsailj& Hay production as feed of animals.	4.50 2.11 1.10 0.50
	Weighted average		2.05
Relative importance of the weighted average 52%			
4	Protection of the environment	1 - Windbreaks tree-planting. 2 - Integrated biological Control by using natural enemies and biological control to fight major insect pests). 3 - Crop residue must not be burnt but composted for Manuring. 4 - protection of wildlife.	2.34 1.25 1.09 0.50
	Weighted average		1.30
Relative importance of the weighted average33%			

SD = 0.81 X = 2.32 N = 133

Table (3): show the four fields of study that took place in the group of medium importance, few important, and very few important, as follows:
1. Field of water security: ranked first at rate importance 2.97, with relative importance of the weighted average 75% , the paragraph (Drip irrigation technology save the water as compared to other method of irrigation) came at high rate importance 4.70 the reason for its importance perhaps that farmers believe drip irrigation technology is very profitable as it saves 60-70% water as compared to surface irrigation method , reduces labour cost, protects the plants from diseases by minimizing humidity in atmosphere and soluble fertilizers can also be applied with drip irrigation water(21,22,23). while paragraph (Rain water harvesting to use it in the summer) came at lowest rank in this field with importance rate 2.21.

2- Field protection of soil: ranked second at a rate importance 2.05, with relative importance of the weighted average 74%, the paragraph (Organic matter essential for maintaining soil fertility and improve water holding capacity of soil) came at high rate 4.65 the reason for its importance perhaps that farmers knows Soil drought & lack fertility are a major problem threatening the sustainability of farming in Baghdad gov. – and Organic matter practices have been proposed to minimize the extent of this environmental problem (Cannell& Hawes, 1994)

3 – Field production inputs provision: ranked third at average 2.05, with relative importance of the weighted average 52%, the paragraph (Local seed bank means using local and adapted seed in the agriculture.) came at high rate at average 4.50 the reason for its importance perhaps that farmers knows that local and adapted seeds gave high yield.

4 - Field protection of the environment: ranked fourth with average1.30, with relative importance of the weighted average 33%, this field reveals that farmers have least knowledge about Windbreaks tree-planting, Integrated biological Control, Organic Farming, protection of wildlife, this field ranked the lowest the reason may be that farmers knew very little about these beneficial practices because perhaps there were no integrated management programs for crop production in the study areas [24] .

Recommendations

1-Its need to build programs to meet the needs of sustainable agriculture development practices knowledge of the framers and giving farmers the opportunity to participate in the planning, implementation and evaluation.

2-The need to integrate sustainable agriculture development practices into the agricultural college education curriculum.

2-Television programs Intensify aimed to clarify the concepts of (SAD) practices and its importance.

4- Extension department should consider the attribute of observability and therefore use field trips and demonstration days to assist farmers adoption (SAD) practices.

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