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THE REALITY OF VEGETABLES FARMERS PRACTICES IN THE FIELD OF WATER RATIONALIZATION AND THE WAYS TO DEVELOP IT IN SOUTHERN REGION OF IRAQ

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Abstract

The research aimed to identify the reality of the vegetables farmer's practices in the field of water rationalization in the southern provinces of Iraq and to achieve the research goal a questionnaire was designed, contain one part of (30) paragraphs. the provinces of Dewanya, Muthana and Dhi Qar were chosen for conducted the research. The research community included all the vegetables farmers in the three provinces reaching (12993) farmer. a random sample of (130) farmer was chosen represented (1%) of research sample. The researcher concluded that there are some of incorrect agricultural practices in the field of water rationalization. The researcher recommends to adopt this research from the agricultural extensional and training directorate to instruct and educates the vegetables farmers the scientific practices in water rationalization that insure increasing productivity, also conserve and sustain natural resources.

***Keywords*:** agricultural practices, water rationalization, extensional service.

Introduction

Water has a great importance in the human societies, and it was the main reason of the emergence and rising of the ancient civilizations such as the Mesopotamia and Nile Valley civilizations. Waters considered the most important natural recourses that human activities depend on it such as agriculture, industry and domestic uses. Saltwater in seas and oceans accounts 97% of the world water, the remaining that accounts 3% represent freshwater, 75% of it available in the form of mountains and glacial rivers and 1% of the freshwater of the globe is available in lakes and rivers (Mekhemer and Hijazi, 1996). Freshwater renewal by rains and snow that estimated 110 cubic meters, much of it lost by evaporation and flowing in water outlets (Al-Ashram,2001). Difference in the geographical distribution of spread and renewal freshwater around the continents causes scarcity in water resources as well as other contributing factors such as the increasing population growth which expected to reach 9.6 billion people in 2050 (FAO,2015). Agriculture take up alone 70% of the used water resources total in the economic activities, while researches refers that the global water consumed will be increase to 19% in 2050 (Aweys, 1997) (Bricherry,2007). Human misuse of water and industrial pollution also considered factors that causes water scarcity (Al-Makhzoumi, 2011, 19). Climate change such as frequency of droughts, floods causes changing in the amounts and rains pattern which effect on agricultural activity (Al-Shayeb and Barek, 2014).

Iraq which is located in the arid and semi-arid areas suffering from water scarcity caused by climate change that lead for more drought, rains amounts reduction and increase evaporation rates thus reducing water flow to the Tigris and Euphrates rivers (Al-Emeery, 2013). And Iraq has experienced four seasons of droughts from 2000 to 2009 where the frequent dust storms that hit north and south of Iraq, had doubled the problem of desertification (Al-Azawi, 2006). Future prediction results of the UN climate team, referred to the probability of reduction occurs in rains and snow average falling on Turkish heights thus decreasing water flows to the Tigris and the Euphrates rivers (Al-Emeer, 2010). Also the overpopulation that expected to reach 40 million in Iraq led to increase Iraq need to water resources when the individual share has decreased to limits closer to the water poverty line reaching 1000 cube meter in conjunction with the increasing of withdrawn water quantities for agriculture while reached 107.2% in the most drought two years in Iraq 2007- 2008 (Yassen, 2013). The water and agricultural projects constructed by Turkey on Tigris and Euphrates rivers which both current from Turkey effected on the two rivers supplies more than 75% which poses a continuing threat to the Iraqi water security (Al-Shammari, 2012). Weakness in water resources management in Iraq also considered a main reason for water scarcity while the use of traditional irrigation methods and poor irrigation systems led to waste about 50% of consumed water (Al-Maamouri and Al-Ani, 2010). A few incorrect agricultural practices carried out by farmers in the field of irrigation water rationalization as well as the absence of the qualified administrative and technical staff caused waste in irrigation water (Jasim, 1995). Considering the human element is responsible for the use and management of water, so instruct and educate the farmers to rationalize water use considered an important thing (Al-Adly and others, 1997). The agricultural extension doing an important role in field of irrigation water rationalization through educating farmers to use the correct agricultural practices in the process of soil preparations and crop service operation (Rizk,1998), using modern irrigation technologies, good farming systems, providing extensional materials such as bulletins and educational films related to water management (Khalili, 2014), also doing an important role in sustainable management of water resources over ensuring the farmer commitment to implement the extensional activities related to the realization of the water resources importance and activity of treating, protecting, and developing water resources (Ommani and Noorivandi, 2011). As well as developing the farmer's orientations towards participation in irrigation management through contacting the extensional operation officials, the local leaders and neighbors, local TV programs to transportation and diffusion the modern irrigation technologies (Miraze, 2012). So it became necessary to focus on the integrative concept of irrigation systems and irrigation water rationalization themes which

became meaning a number of interrelated procedures administratively, economically, socially, technically and legislatively to achieve the largest economic return of the independent water unite in crop production (Al-Hadithi and Al-Kubaisi, 2010).

Materials and Methods

The provinces of Diwanya, Muthana and Dhi Qar were chosen to achieve the research goal as they are of the provinces that are interested in growing vegetables. A random sample of (130) farmer was chosen represented (1%) of the total of vegetables farmers in the three provinces which equals (12993) farmer. A questionnaire of one part contain (30) paragraph was designed to measure the realty of the vegetables farmers' practices in the field of water rationalization (Table 1). The questionnaire in its preliminary form was introduced to (14) experts in fields of agricultural extension, horticulture and soil for the purpose of statement of their approval on each paragraph, after that the questionnaire was provided with quad scale of (4) levels are (always, often, sometimes, do not implement) in front of each paragraph represented the farmers answers, also given (4) digital values as (o, 1, 2, 3) respectively which is mean each farmer will gain digital values level between (0-30) . After finish the questionnaire preparation a pre- test on a random sample of (10) farmers and out of the research sample was carried out to make sure of the paragraphs convenience to the farmers. Data was collected through the farmer's personal interviews and during the period (10/12/2018-14/1/2019), after that distributed and analyzed using the arithmetic mean, the weighted arithmetic mean and percentage weight. Results were organized in tables for presentation and interpretation then draw conclusions and recommendations (Table 2).

Results and Discussion

Results showed (Table 2) that the paragraph 2 (use the covered agriculture), gained first rank with weighted arithmetic mean of (2.623) and percentage mean of (87.43) and the reason of that belongs to the advantages of covered agriculture in the field of water rationalization such as:

1. Helps to maintenance soil moisture and reducing water loss through transpire and evaporation, and subsequently rationalize irrigation water.
2. Using modern irrigation techniques such as dripping techniques.
3. Using types of hybrid seeds that bear drought and do not consume too much water.

Also Results showed that paragraph 29 (indoor irrigation water canals are paved), gained the last rank with weighted arithmetic mean (2.146) and percentage mean of (71.53) for the following reasons:

1. Weakness in farmer consciousness about the importance of water canals paving through preventing water loss by transpiration.
2. Weakness of water extension which is necessary to educate farmers by the effective role of water canals paving on water rationalization.
3. Farmer financial disability to pave their indoor water canals specially vegetables farmers which have small lands.

Table 1: The paragraphs of the scale of the vegetables farmer's practices in the field of water rationalization

	F	Agricultural Practices Paragraphs
Agriculture type	1	Use the open agriculture
	2	Use the covered agriculture
	3	Use both covered and open agriculture
	4	Commit to agricultural plan
	5	Follow the agricultural rotation
	6	Commit to the water share
Removing crop residue	7	Collect crop residue manually
	8	Burn residue in field
	9	Let animal graze crop residue
	10	Buried residue in soil
	11	Drop residue in the indoor water channels
	12	Plow the land deep and perpendicularly
	13	Use rotary cultivator in smooth and land leveling
	14	Irrigate the soil profusely
Planting methods	15	Planting crop in furrows
	16	Planting crop in terraces
	17	Planting crop in basins
Fertilization	18	Use chemical fertilizers
	19	Use organic fertilizers
Seeding operation	20	Use mechanical seed drills
	21	Disperse seeds manually
	22	Planting saplings
Source of irrigation	23	From river or sub rivulets
	24	Use wells water
	25	Use organic coverage (mulch)
Weeds combat	26	Remove weeds manually
	27	Use pesticides
	28	Provide the field with drains
	29	Indoor irrigation canals are paved
	30	Plant the field sides with shrubs

Table 2: Farmer distribution according to the suggested paragraphs of the vegetables farmer's practices in the field of rationalization

Sequence according questionnaire	Agricultural practices paragraphs	Weighted Arithmetic mean	Percentage weight	Sequence according importance
2	Use the covered agriculture	2.623	87.43	1
13	Use rotary cultivator in smooth and land leveling	2.592	86.4	2
11	Drop residue in the internal rivulets	2.561	85.36	3
16	Planting crop in terraces	2.530	84.33	4
28	Provide the field with drains	2.523	84.1	5
20	Use mechanical seed drills	2.492	83.06	6
22	Planting saplings	2.484	82.8	7
1	Use the open agriculture	2.469	82.3	8
12	Plow the land deep and perpendicularly	2.461	82.03	9
8	Plow the land deep and perpendicularly	2.453	81.76	10
5	Follow the agricultural rotation	2.415	80.5	11
17	Planting crop in basins	2.384	79.46	12
4	Commit to agricultural plan	2.376	79.2	13
3	Use both covered and open agriculture	2.369	78.96	14
24	Use wells water	2.361	78.7	15
9	Let animal graze crop residue	2.353	78.43	16
18	Use chemical fertilizers	2.338	77.93	17
25	Use organic coverage (mulch)	2.330	77.66	18
7	Collect crop residue manually	2.292	76.4	19
10	Buried residue in soil	2.284	76.13	20
14	Irrigate the soil profusely	2.269	75.63	21
30	Plant the field sides with shrubs	2.223	74.1	22
21	Disperse seeds manually	2.215	73.83	23
26	Remove weeds manually	2.192	73.2	24
6	Commit to the water share	2.184	72.8	25
27	Use pesticides	2.176	72.53	26
15	Planting crop in furrows	2.169	72.3	27
23	From river or sub rivulets	2.161	72.03	28
19	Use organic fertilizers	2.153	71.76	29
29	Indoor irrigation canals are paved	2.146	71.53	30

Conclusions and Recommendation

Research showed some incorrect agricultural practices that effect on natural resources, soil and water that lead to product reduction and quality regression, such as:

1. Burn crops residue in field or drop it in indoor water channels.
2. Extreme usage of chemicals fertilizers and pesticides with out realizing its dangerous effect on human health and natural resources.
3. Exceeding water shares.
4. Using traditional irrigation systems that causes water loss.

All these incorrect practices and others, needs from the agricultural extension department to direct and educates the farmers to use the scientific practices that increase productivity and conservation the natural resources, over the extensional activities as extensional symposiums and field views.

This result is consistent with the study of (Shahin, 2014) and (Embarak and Elwan, 2017) which bouth indicate that there are some incorrect agricultural practices for some farmers in the field of water rationalization. Also the researcher study disagree with the study of (Dif and Gad, 2016) in the method of collect and data analyzing were the last one used the available published and unpublished data that are issued by the governmental entities in Egypt and through using liner programming in analyze data, while the researcher used a questionnaire in data collection through the farmers personal interviews and using the arithmetic mean, the weighted arithmetic mean and percentage weight in distribute and data analyzing

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